Safe Work Plan

Portland Harbor Hydrographic Survey

March 5, 2018

Prepared by:

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PRIVILEGED AND CONFIDENTIAL/JOINT DEFENSE COMMUNICATION/ATTORNEY WORK PRODUCT

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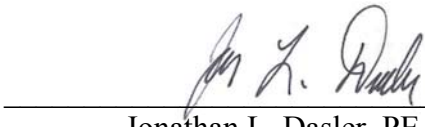
Portland Harbor Hydrographic Survey
March 5, 2018

Signature Page

This Safe Work Plan, prepared and approved by the undersigned, will be used to govern health and safety aspects of fieldwork for the Portland Harbor Hydrographic Survey to be conducted by David Evans and Associates, Inc.

Prepared by:



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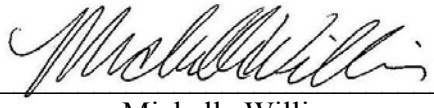

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TABLE OF CONTENTS

Signature Page i
1.0 OVERVIEW 1
2.0 STATEMENT OF SAFETY AND HEALTH POLICY 1
3.0 RESPONSIBILITIES AND LINES OF AUTHORITIES 2
3.1 Statement of DEA's Ultimate Responsibility 2
3.2 Health and Safety Personnel and Lines of Authority 2
3.3 Enforcement 3
4.0 TRAINING 3
5.0 SAFETY AND HEALTH INSPECTIONS 3
6.0 VESSEL OPERATIONS 3
6.1 DEA Survey Vessels 4
7.0 EMERGENCY PREPAREDNESS 6
7.1 Pre-Emergency Preparation 6
7.2 Project Communications 6
7.3 Recognition of Emergency Situations and Emergency Communication 6
7.4 Emergency Response Plans 6
7.4.a Firefighting plan 7
7.4.b Emergency Contact Numbers 7
7.4.c Person Overboard 8
7.4.d Medical Support 8
7.4.e Personal Injury 9
7.4.f Emergency Route To Nearest Hospital 9
8.0 ACKNOWLEDGEMENT OF COMPLIANCE 14

List of Figures

Figure 1: DEA Survey Vessel William R. Broughton 4
Figure 2: DEA's Survey Vessel River Hawk 4
Figure 3: DEA's Personal Watercraft 5
Figure 4: DEA's Remote-Controlled Q-Boat 5

List of Tables

Table 1: Contact information for DEA Supervisors and Field Personnel 7
Table 2: Emergency Facilities and AECOM Key Personnel from HASP 8

List of Appendices

Appendix A. DEA Vessel Safety Policy and Procedures
Appendix B. Safety and Environmental Meeting Report
Appendix C. Vessel Condition Surveys
Appendix D. State Boating Cards
Appendix E. First Aid, CPR, AED Training
Appendix F. USCG License
Appendix G. Job Hazard Assessment

1.0 OVERVIEW

David Evans and Associates, Inc. (DEA) will conduct a hydrographic survey of the Portland Harbor over the winter of 2018 to develop an accurate basemap of riverbed elevations. In the course of hydrographic survey operations, DEA field personnel will be operating or participating in work activities nearshore and onboard marine vessels. To supplement the project-wide Health and Safety Plan (HASP) and Job Hazard Assessment (JHA) compiled by AECOM, DEA has implemented a Safe Work Plan that specifically addresses and incorporates policies and procedures established by DEA for the conduct of safe hydrographic survey operations.

This document details the safety policies and procedures for field personnel engaging in shoreside, nearshore, and offshore survey operations throughout the duration of the Portland Harbor Hydrographic Survey. This plan also describes the DEA primary survey vessel and potential alternate vessels and platforms that will be utilized for this project in terms of their safety related specifications and onboard safety equipment. Lastly, a list of DEA field personnel and their contact information is provided, as well as copies of field crew First-Aid/CPR/AED certification cards, Oregon/Washington state boating safety cards, and the primary vessel Captain's US Coast Guard (USCG) Masters License.

2.0 STATEMENT OF SAFETY AND HEALTH POLICY

It is the policy and practice of DEA to maintain a safe and healthy work environment for employees, and to comply with all applicable occupational health and safety regulations. DEA's Health and Safety Program establishes a framework for identifying and correcting workplace hazards at DEA in order to prevent the occurrence of illness and injury. It is the policy of DEA to administer its programs in a manner that will assure its employees that places and conditions of employment are free from recognized hazards which are likely to cause serious health effects, injury, or death.

DEA will provide appropriate safety equipment, safety training, and a safe working environment for all of its employees. DEA accepts responsibility for providing leadership in the implementation of this program, for its effectiveness and improvement, and for providing the safeguards necessary to ensure safe and healthy working conditions. Likewise, each employee is expected to assume responsibility for the safety and good health of themselves, their fellow employees, clients, subcontractors and the general public. This responsibility is shared by all employees, at every level.

It should be understood that no employee is required to work at a job he or she knows is not safe or healthful, nor will any employee be allowed to work when the workplace or job site is unsafe. All employees must notify their supervisors or the Director of Marine Services immediately of any situation beyond their ability or authority to correct. Without exception, working safely is a condition of employment.

3.0 RESPONSIBILITIES AND LINES OF AUTHORITIES

3.1 Statement of DEA's Ultimate Responsibility

This site-specific Safe Work Plan describes safe working practices for conducting field activities at potentially hazardous sites. The goal of the Safe Work Plan is to establish procedures for safe working practices for all field personnel.

During site work, DEA will be responsible and accountable for the implementation of this Safe Work Plan. Lines of authority with DEA for Safe Work Plan implementation will be the the Project Manager and the Field Safety Manager.

All personnel involved in fieldwork on this project are required to comply with this Safe Work Plan. The contents of this Safe Work Plan and the Job Hazard Analysis (JHA), included in Appendix G, reflect the anticipated types of activities to be performed and knowledge of the physical characteristics of the site. The complete Safe Work Plan will be present during fieldwork and all personnel on the project will be required to read and acknowledge understanding of the Safe Work Plan by signing the field document in section 9.0.

3.2 Health and Safety Personnel and Lines of Authority

Key health and safety personnel and their responsibilities are described below. These individuals are responsible and accountable for the implementation of this Safe Work Plan.

Jon Dasler, DEA Principal-In-Charge/Project Manager (PM): The PM has overall responsibility for the successful outcome of the project. The PM will ensure that adequate resources and budget are provided for the health and safety staff to carry out their responsibilities during fieldwork. The PM, in consultation with the HSO, makes final decisions concerning implementation of the Safe Work Plan.

Michelle Willis, DEA Corporate Health and Safety Officer: The HSO has overall responsibility for approval and revisions of this Safe Work Plan.

Jason Dorfman, DEA Marine Services Field Safety Manager (FSM): The FSM will coordinate the technical components of the field program with health and safety components, and ensure that work is performed in accordance with this Safe Work Plan, the JHA (Appendix G) and DEA's Vessel Safety Policy and Procedures. The FSM also has stop-work authority, to be used if there is an imminent safety hazard or potentially dangerous situation. The FSM or his designee shall be present during surveying operations.

Field Personnel: The hydrographic crew will consist of two DEA staff hydrographers per survey vessel, one being a Senior Hydrographer in charge of survey operations. All of DEA Marine Services field staff are well versed in the conduct of hydrographic surveys, hold Oregon/Washington state boating licenses (Appendix D), and are trained in CPR, First Aid, and use of our onboard AED (Appendix E). When running shoreline in areas of submerged piling a

third crew member may be used to spot obstructions. David Moehl, a Senior Hydrographer with DEA has obtained his 100-ton USCG Master's license (Appendix F), and will serve as the primary vessel operator for the project when passengers are onboard. All field crew members will be familiar with HASP and comply with the information in this Safe Work Plan and the JHA. They also have the responsibility to report any potentially unsafe or hazardous conditions to the FSM immediately.

3.3 Enforcement

No work shall be performed unless the FSM is present on the job site. It is the responsibility of the FSM to keep all personnel compliant and accountable to the Safe Work Plan. Non-compliance will result in immediate corrective action. Further, the FSM has the authority to remove personnel deemed to be non-compliant with the Safe Work Plan from the job site.

4.0 TRAINING

Project-specific training is described below. Because no contact with contaminated media is expected, HAZWOPER training for surveying personnel is not required.

All DEA team members are trained in First Aid, CPR, AED and all maintain Transportation Worker Information Credential (TWIC) cards to meet Homeland Security requirements at Port facilities. The FSM, Jason Dorfman, is certified in First Aid, CPR, and the use of an AED. Documentation of all employee training will be kept in the project's health and safety files.

5.0 SAFETY AND HEALTH INSPECTIONS

Daily inspection of rigging, personnel compliance with required safety equipment, and general inspection of job site safety and health will be the responsibility of the FSM during periods of work. The FSM will keep a log of inspections, deficiencies and follow-up procedures.

6.0 VESSEL OPERATIONS

To comply with all applicable boating safety requirements, DEA has adopted commercial boating policies that are based upon, and in many cases exceed, federal guidelines. DEA field staff will comply with the vessel safety policies and procedures outlined in DEA's Vessel Safety Policy and Procedures (Appendix A), which outlines staff responsibilities and policies related to truck/trailer and vessel inspection guidelines, safe vessel operation, safe navigation, onboard safety devices/equipment, Personal Protective Equipment (PPE), radio and cell-phone communication, weather related safety, and emergency procedures and response. At the start of the project and at the start of each following week for the duration of the project, DEA field crews will review these vessel safety procedures and fill out a Safety and Environmental Meeting Report (Appendix B) discussing the potential safety and environmental concerns specific to that week's operations.

In addition, AECOM has prepared a Job Hazard Assessment (JHA) that will be followed and is included in Appendix G.

6.1 DEA Survey Vessels

Primary Survey Vessel

The *William R. Broughton* (Figure 1) will be used as the primary survey platform for survey operations. The *Broughton* is a modified Duckworth Offshore 24-foot aluminum hull vessel with a heated, enclosed cabin and twin 115 horsepower engines, owned by DEA. The vessel is designed for safe and efficient hydrographic survey operations and equipped with dual VHF radios, radar, chart plotter, emersions suites, an Emergency Position Indicator Radio Beacon (EPIRB), emergency offshore life raft, and AED. The vessel is inspected annually by a marine surveyor and meets all USCG requirements for a vessel of its class, including required PPE, first aid, and emergency gear. A copy of the most recent annual condition survey for the *Broughton* can be found in Appendix C.

Figure 1: DEA Survey Vessel *William R. Broughton*

Secondary Survey Vessel

The *River Hawk* (Figure 2) is a purpose-built river sled, modified for hydrographic survey data acquisition, and may be used to acquire supplemental soundings in shallow water and/or tight quarters. The vessel is powered by a 105 horsepower outboard jet drive and has a 9.9 horsepower auxiliary motor. Both motors are started and controlled at the vessel helm. Additional equipment includes VHF radio, integrated GPS chart plotter/depth sounder, and AED. The vessel is inspected annually by a marine surveyor and meets all USCG requirements for a vessel of its class including required PPE and emergency gear. A copy of the most recent annual condition survey for the *Riverhawk* can also be found in Appendix C.

Figure 2: DEA's Survey Vessel River Hawk

Personal Watercraft

DEA owns two SeaDoo GTX 4-stroke personal watercraft (PWC, Figure 3) customized by DEA with specialized hydrographic survey gear, that may be used to acquire supplemental soundings in shallow water and/or areas with restricted maneuverability. Unlike the larger vessels, PWC are not inspected annually, however they do meet all USCG requirements for vessels of their class with the required PPE and emergency gear carried onboard, including dry suits for vessel operators.

Figure 3: DEA's Personal Watercraft

Remote Controlled Vessel

A DEA-owned Teledyne Ocean Science Q-Boat (Figure 4) customized by DEA with hydrographic survey equipment may be used to acquire supplemental soundings in shallow water and areas with restricted maneuverability. Q-Boat operations are remotely controlled and will be supported by one of DEA's larger vessels with all personal operating in accordance with the safety standards outlined in this report.

Figure 4: DEA's Remote-Controlled *Q-Boat*

7.0 EMERGENCY PREPAREDNESS

For this project, it is anticipated that physical hazards will present a greater risk of injury than chemical hazards. Physical hazards are identified and discussed below.

7.1 Pre-Emergency Preparation

Before the start of field activities, the FSM and PM will ensure that preparation has been made in anticipation of emergencies. Preparatory actions include the following:

- Meeting with the FSM concerning the emergency procedures in the event of an incident requiring an emergency response
- A training session given by senior staff operating field equipment, to apprise field personnel of operating procedures and specific risks associated with that equipment.
- Ensuring that field personnel are aware of the existence of the emergency response plan in the Safe Work Plan and ensuring that a copy of the Safe Work Plan accompanies the field team

7.2 Project Communications

The Project FSM will act and serve as the Project Emergency Coordinator (PEC) in the event of an emergency and coordinate the emergency response. The PEC will be notified immediately when an emergency is recognized. The PEC will be responsible for evaluating the emergency situation, initiating an emergency response or water rescue, and directing interim actions before the arrival of emergency response units.

The FSM will designate his replacement when he is not serving as the FSM. The FSM will be responsible for notifying the appropriate emergency response units, coordinating access with those units, and will notify the Project Manager as soon as possible after initiating an emergency response action. The Project Manager will have responsibility for notifying the client.

7.3 Recognition of Emergency Situations and Emergency Communication

Emergency situations will generally be recognizable by observation. Personnel being swept down river, personal injury, fire or spill are all examples of emergency situations that require emergency communication. Due to the extent of the project and noise from the river, all personnel will be provided with a two-way radio. Rescue personnel will be equipped with two radios, one of which shall be operating on a designated emergency response channel. In the event of an emergency situation, the observer or victim shall immediately sound a whistle to clear radio traffic followed by radio contact informing rescue personnel of the situation. Upon hearing a whistle, all personnel shall halt radio traffic in order to receive the report of the emergency situation.

7.4 Emergency Response Plans

As a result of the hazards and the conditions under which operations will be conducted, the potential exists for an emergency situation to occur. Emergencies may include personnel being

swept down river and over the barrier dam, personal injury, fire, or explosion. Onshore organizations will be relied upon to provide response in emergency situations. The local fire department and ambulance service can provide timely response. Field personnel will be responsible for identifying an emergency situation, providing first aid if applicable, notifying the appropriate personnel or agency, and evacuating any hazardous area. Boat personnel will attempt to control only very minor hazards that could present an emergency situation, such as a small fire, and will otherwise rely on on-scene and outside emergency response resources.

The following sections identify the individual(s) who should be notified in case of emergency, provide a list of emergency telephone numbers, offer guidance for particular types of emergencies, and provide directions and a map for getting from any project location to a hospital.

7.4.a Firefighting plan

The FSM is the designated Fire Officer for this project. All motorized and manned boats are equipped with a fire extinguisher. In the event of a fire, activate the emergency communication plan and notify the on-site FSM. Field personnel shall attempt to control only small fires, should they occur. If an explosion appears likely, personnel shall follow evacuation procedures specified during the training session. If a fire cannot be controlled with a fire extinguisher on board that is part of the required safety equipment, personnel shall either withdraw from the vicinity of the fire or evacuate the boat as specified in the training session.

Even if visible flames have been extinguished, the FSM needs to inspect and evaluate the scene prior to resuming operations.

7.4.b Emergency Contact Numbers

All personnel must know whom to notify in the event of an emergency situation, even though the FSM has primary responsibility for notification. Table 1 and 2 lists the names and phone numbers of key personnel and emergency response services.

Table 1: Contact information for DEA Supervisors and Field Personnel

Name	Title	Direct Line	Mobile
DEA Marine Services	DEA Base of Operations	(360) 314-3200	
Jon L. Dasler, PE, PLS, CH	DEA Principal-In-Charge	(360) 314-3202	(b) (6)
Michelle Willis	DEA Health and Safety Officer (HSO)	(503) 223-6663	
Jason M. Dorfman	DEA Hydrographer/ Designated FSM	(360) 314-3225	
Gregory, P. Baird, PLS, CH	DEA Project Surveyor	(360) 314-3213	
John M. Staly	DEA Senior Hydrographer/Operator	(360) 314-3216	
David T. Moehl, PLS, CH USCG 100-Ton Master	DEA Senior Hydrographer/Operator Captain while carrying passengers	(360) 314-3211	
Jason M. Dorfman	DEA Hydrographer/ FSM	(360) 314-3225	
Daniel M. Prince	DEA Hydrographer/Vessel Operator	(360) 314-3219	

Table 2: Emergency Facilities and AECOM Key Personnel from HASP

Report ALL SH&E Incidents, no matter how minor, to the Incident Hotline: 800-348-5046 Injury, Property Damage, Vehicle, Security, Regulatory Inspection, Environmental Impact, and any potentially work related injury, discomfort/ pain, or damage.			
Occupational Clinic:	Adventist Health Occupational Medicine	Nearest Hospital:	Legacy Emanuel Medical Center
Address:	10201 SE Main Street Portland, OR 97216	Address:	2801 N Gantenbein Avenue Portland, OR 97227
Phone Number:	503.408.7010	Phone Number:	503.413.2200
Key Personnel			
Project Manager:	Jennifer Pretare, Ph.D.	Cell Phone:	(b) (6)
Supervisor (Field Coordinators):	Nicky Moody (AECOM) Keith Kroeger (Geosyntec) Jennifer Pretare (AECOM)	Cell Phone:	
Safety Officer:	Fred Merrill, CSP	Cell Phone:	
AECOM SH&E Mgr.	Fred Merrill, CSP	Cell Phone:	
Client Project Manager:	Hans Feige	Cell Phone:	

7.4.c Person Overboard

Any personnel in the river shall be treated as a Person Overboard. Response and recovery of personnel in the river will consist of the following:

- Whistle sounded by victim or observer
- Assign observer to keep eyes on victim
- Deployment of life ring and/or rescue line while victim is within range of immediate recovery
- Survey vessel maneuvered for pickup and approach from down current

After recovery, victim is evaluated and treated for signs of shock, hypothermia or personal injury.

7.4.d Medical Support

All DEA personnel have been trained in first aid, CPR and AED procedures. AED, Trauma and First Aid Kits are located on survey vessel.

7.4.e Personal Injury

In the event of serious personal injury, including unconsciousness, possibility of broken bones, severe bleeding or blood loss, burns, shock, or trauma, the first responder will immediately do the following:

- Sound the whistle attached to each life jacket and make radio contact with the PEC
- Access the situation and administer first aid, if qualified
- If not qualified, seek out an individual who is qualified to administer first aid, if time and conditions permit

If the FSM determines that emergency response is not necessary, he or she may direct someone to transport the individual by vehicle to the nearest hospital. Directions and a map showing the route to the hospital are included below.

If a worker leaves the project to seek medical attention, another worker should accompany them to the hospital. When in doubt about the severity of an injury or exposure, always seek medical attention as a conservative approach, and notify the HSO.

The FSM will have responsibility for completing all accident/incident field reports in the event of an accident, injury, or property damage exceed $2,000 and other required follow-up forms.

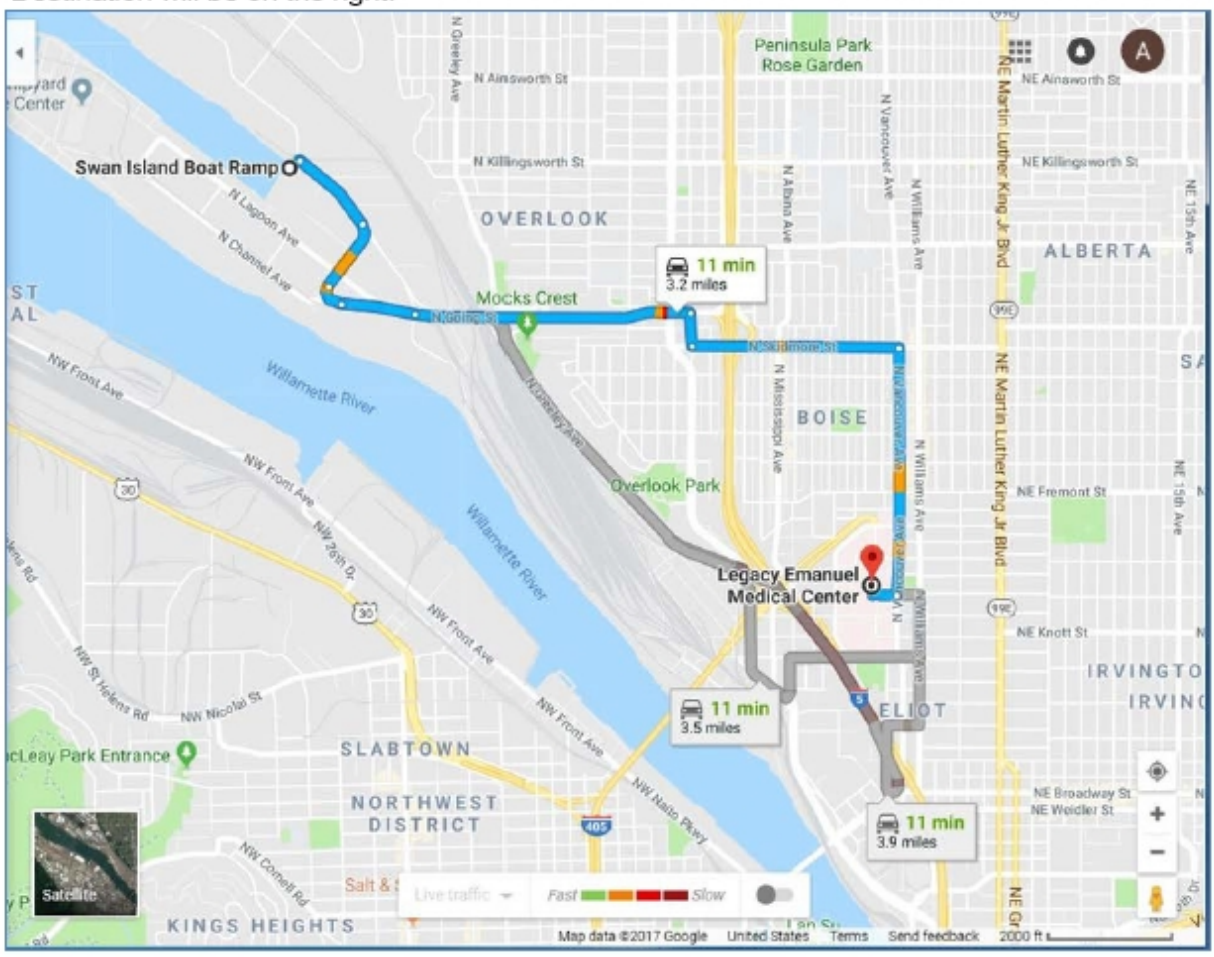
7.4.f Emergency Route To Nearest Hospital

The name, address, telephone number, driving directions and map of the hospitals that will be used to provide medical care are listed as follows:

Legacy Emanuel Medical Center
2801 N Gantenbein Ave
Portland, OR 97227

503-413-2200

From Swan Island Boat Ramp:
1) Head southeast on N Basin Ave toward N Emerson St
2) Continue onto N Anchor St
3) Use any lane to turn slightly left to stay on N Anchor St
4) Continue straight onto N Channel Ave
5) Continue onto N Going St
6) Turn right onto N Maryland Ave
7) Turn left onto N Skidmore St
8) Turn right onto N Vancouver Ave
9) Turn right onto N Stanton St
Destination will be on the right.



Fred's Marina

12800 NW Marina Way, Portland, OR 97231

- Head southeast on NW Marina Way

  2 min (0.8 mi)

- Turn left onto NW St Helens Rd

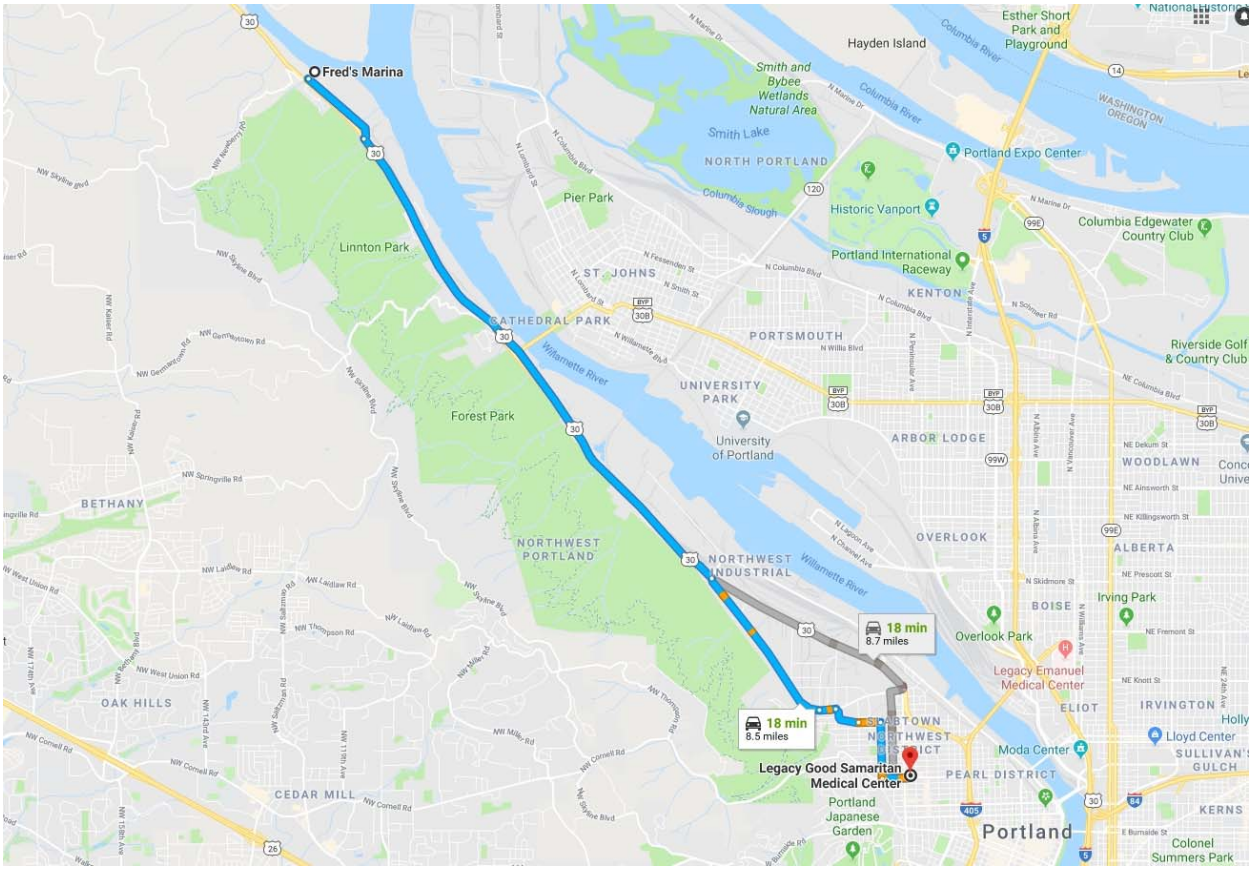
  7 min (4.9 mi)

- Continue on NW St Helens Rd. Take NW 25th Ave to NW Lovejoy St

  9 min (2.9 mi)

Legacy Good Samaritan Medical Center

1015 NW 22nd Ave, Portland, OR 97210



Fred's Marina

12800 NW Marina Way, Portland, OR 97231

- Head southeast on NW Marina Way

  2 min (0.8 mi)

- Continue on NW St Helens Rd. Take US-30 E to N Gantenbein Ave. Take the Kerby Avenue exit from I-405 N/US-30 E

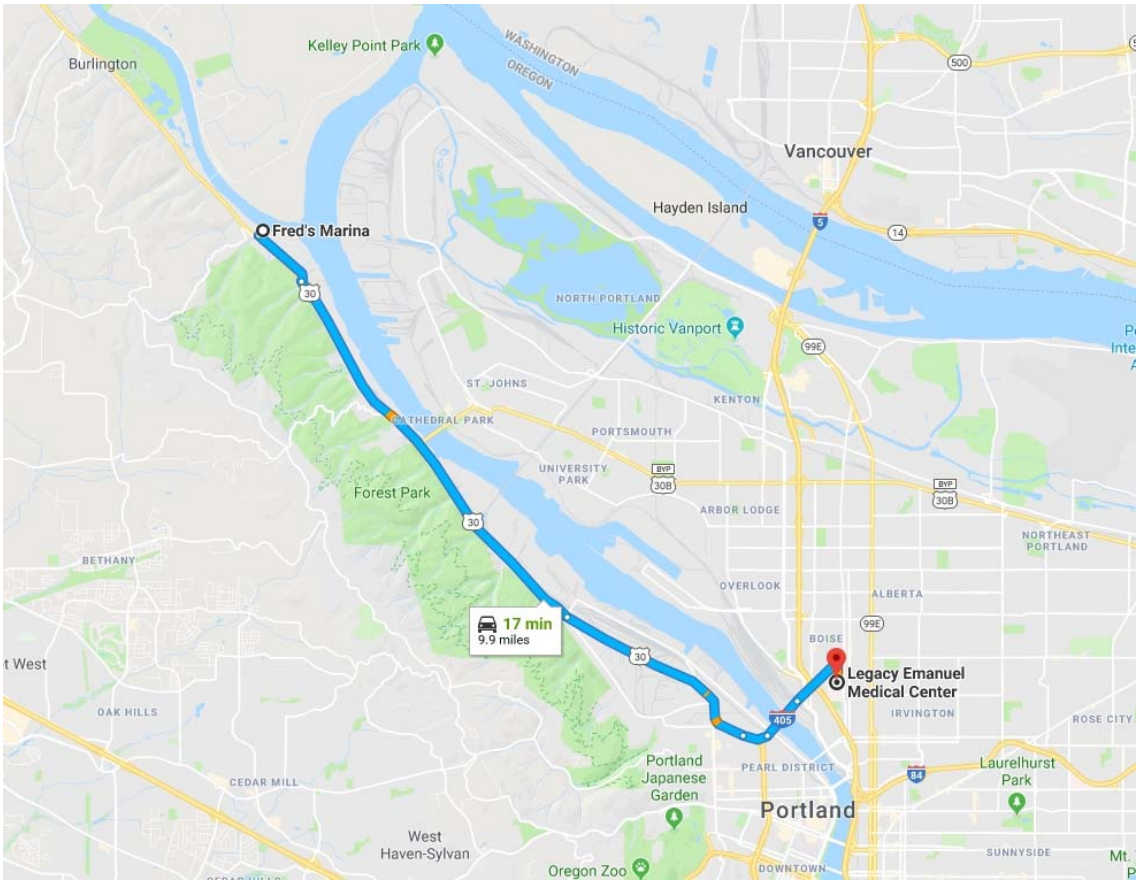
  14 min (8.9 mi)

- Follow N Gantenbein Ave to your destination

  2 min (0.2 mi)

Legacy Emanuel Medical Center

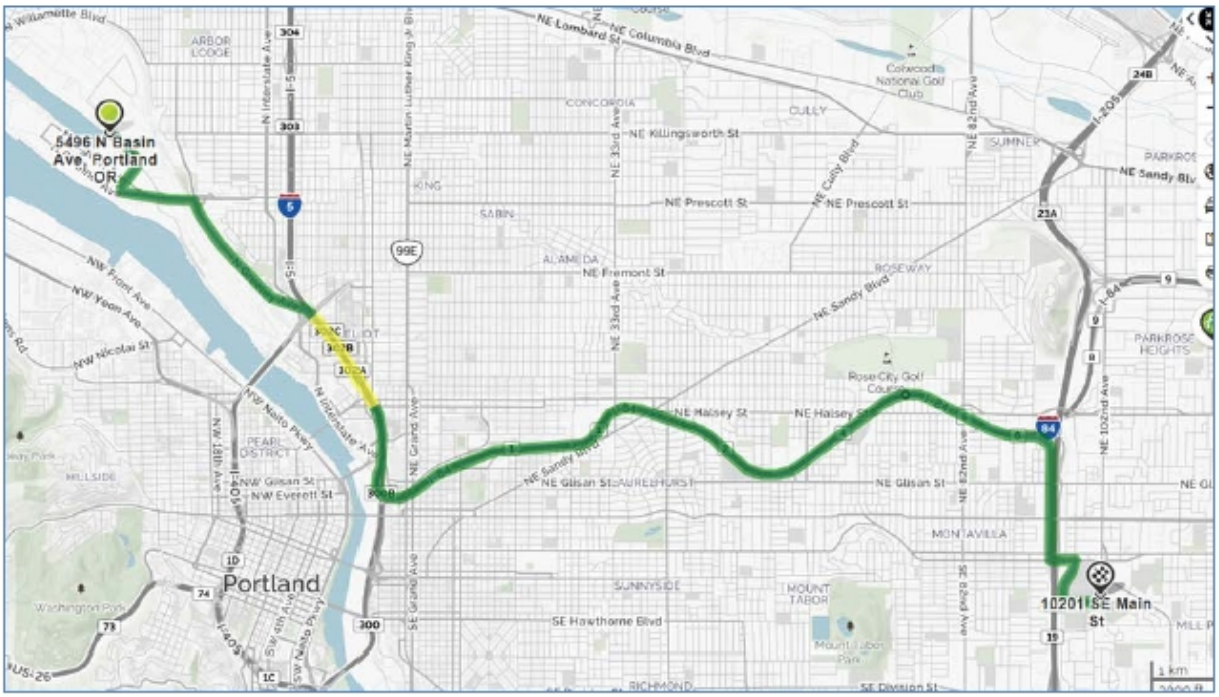
2801 N Gantenbein Ave, Portland, OR 97227



Adventist Health Occupational Medicine
10201 SE Main Street
Portland, OR 97216

503-408-7010

From Swan Island Boat Ramp:
1) Head southeast on N Basin Ave toward N Emerson St
2) Stay straight to go onto N Anchor St
3) Keep left at the fork to continue on N Anchor St
4) Turn slight left onto N Channel Ave
5) N Channel Ave becomes N Going St
6) Turn slight right onto ramp
7) Merge onto N Greeley Ave
8) Merge onto I-5/Pacific Hwy 1 S toward Salem
9) Merge onto I-84 E/US-30 E via Exit 301 toward The Dalles
10) Take Exit 6 toward Salem
11) Keep right to take the Glisan St/Stark St ramp
12) Turn left onto SE Washington St
13) Turn right onto SE 99th Ave
14) Turn left onto SE Main St
15) Your destination is on the left.



8.0 ACKNOWLEDGEMENT OF COMPLIANCE

I have read the Safe Work Plan and appendices, which will be used to govern health and safety aspects of field activities as described in the Work and Quality Plan. I understand the health and safety requirements of the project, which are detailed in this Safe Work Plan.

Signature		Signature	
Print Name	Date	Print Name	Date
Signature		Signature	
Print Name	Date	Print Name	Date
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Print Name	Date	Print Name	Date
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APPENDIX A

David Evans and Associates, Inc.

Vessel Safety Policy and Procedures

David Evans and Associates, Inc.

VESSEL SAFETY POLICY AND PROCEDURES

PURPOSE

David Evans and Associates, Inc. (DEA) employees in the course of hydrographic survey and related marine field projects will be operating or participating in work activities on board marine vessels. In order to comply with all applicable boating safety standards, DEA has adopted commercial boating policies that are based upon, and in many cases exceed, federal guidelines.

This document details the safety standards and procedures for employees and visitors engaging in shoreside, nearshore and offshore operations and management associated with any DEA owned or charted vessel, platform or shoreside operational activities.

POLICY

All employees actively working on such projects will be thoroughly trained in the applicable safety, underway, docking, fueling, and various necessary operational procedures. Employees failing to adhere to policies and procedures adopted in this document may be subject to disciplinary action, up to and including termination of employment.

RESPONSIBILITIES

1. DIRECTOR OF MARINE SERVICES

   The authorizing approval for all water operations shall be acquired through the Director of Marine Services Division (MRN).

   a) The Director shall ensure that vessels are inspected annually by a qualified marine surveyor to ensure structural integrity and safe operating conditions exist.

   b) Records of inspection shall be maintained on the vessel for vessels over 20 feet and shall be available to the designated authority. Records for vessels 20 feet and under shall be on record at the Marine Services office.

   c) Other shoreside operations shall be approved by the employees' supervisor(s).

2. VESSEL CAPTAIN

   The vessel Captain retains the authority for safe maneuvering of the vessel while on site.

3. EMPLOYEES CONDUCTING WATER OPERATIONS

   All DEA employees and visitors shall follow the guidelines herein while conducting water operations. The following items are the responsibility of the DEA employee:

   a) Employees must receive proper training prior to operation of any equipment used; including safety precautions, emergency procedures, and rescue response.

   b) Employees must wear safety and personal protection equipment (PPE) when required.

c) Employees must wear adequate clothing and maintain foul weather gear in their possession prior to departure.

d) Employees must not consume any substance that will cause impairment including drugs, alcohol, and medication, while conducting water operations.

e) All personnel shall work to prevent fatigue by receiving 8 hours rest in a 24 hour period, excluding travel time. When quarters are onsite, rest may be divided into no more than two periods, of which one must be at least 6 continuous hours.

f) At anytime, if the employee feels unsafe, it is his/her responsibility to make it known to the vessel operator and/or the Field Party Chief.

g) Recreational activities are prohibited during water operations (i.e. swimming, fishing, etc.).

h) Employees MAY NOT take unnecessary risks!!!

With respect to vessel operations:

a) Operators must acquire approval for vessel operations.

b) All vessel operators shall have adequate knowledge of the USCG Regulations "Rules of the Road" , hold a state boater education card or equivalent, and shall be approved for vessel operation by the DEA Director of Marine Services Division. When required, the vessel operator shall be in possession of a current USCG license for vessel operators for adequate tonnage.

c) A minimum of two employees onboard shall maintain a state boater education card or equivalent.

d) All employees must maintain proper seamanship, conduct, and prudent judgment throughout operations to prevent unnecessary hazards.

e) A proper watch shall be maintained to avoid other vessels, debris, and obstructions at all times.

f) Employees must be aware of their position in relation to operations and vessel stability at all times.

g) Employees are prohibited from getting underway alone without working radio communications.

h) A float plan shall be registered with the Director of Marine Services Division before water operations commence. See *Figure A Float Plan*.

i) DEA employees may only board vessels complying with U.S. Coast Guard (USCG) Regulations. See *Figure B Operational Safety Inspection* and *Figure C Safety Inspection Guidelines* for inspection checklist and requirements.

PROCEDURES

1. PRE-OPERATIONS SAFETY

a) A pre-operations safety meeting shall be held and documented prior to commencement of operations and weekly thereafter, detailing the duties and

responsibilities of all personnel in the event of an emergency and the location of all emergency equipment by a qualified member of the crew. At this time a safe harbor/area will be designated in the event of an emergency. Any questions or concerns shall be addressed at this time, if not prior.

b) Vessel operations

- Trailered vessels shall have a vessel trailer that meets the federal and state Departments of Transportation codes and requirements.
- When required, USCG documentation shall be posted in a public area of the vessel.
- Operators must maintain the vessel log with personnel, events and updates corresponding with time.
- Qualified employees shall inspect and test the vessel to determine safety for operations. Any vessel found to be in an unsafe condition shall be removed from service and its use prohibited until specified unsafe conditions have been remedied.
    (a) Navigation lights, radar systems, radios, depth sounders, and other navigationally significant equipment shall be operated, inspected, and recorded monthly and prior to each job by qualified personnel to ensure proper operation.
    (b) Inspect for water tight integrity of the vessel (i.e. plug, leaks, and bilges) before launch and immediately after launch while remaining on trailer, and periodically during operations.
        (i) All vessels over 22-feet and not subject to USCG inspection shall be inspected by a National Association of Marine Surveyors (NAMS) licensed marine surveyor with at least five (5) years of experience.
        (ii) All other vessels or floating plants shall be inspected annually by qualified personnel. Periodic inspections shall assure safe operating conditions are maintained.
        (iii) Inspection records shall be maintained on the vessel (if practicable), and if appropriate, additional copies may be maintained onsite.
- A proper watch and appropriate navigation lights, safe speeds, radar, signals, and day shapes shall be displayed for all weather and sea conditions as regulated by the USCG.
- Radio communication will be sustained as follows:
    (a) Proper radio communications shall be maintained using VHF radio Channel 13, 16, or USCG specified VHF channels for specific waterways, when contacting other vessels.
    (b) Two two-way radios, or cellular phones with adequate coverage,

shall be available for ship-to-shore operations or shoreside operations.

(c) Procedures identified in *Figure D Radio Use* must be followed.

- Fenders shall be deployed to prevent damage to docks and vessel and minimize pinching hazards when docking or rafting to other vessels.
- Engine compartment requirements are:
  - (a) At least one electrical working bilge pump shall be onboard.
  - (b) At least one manual bilge pump shall be onboard.
  - (c) The engine compartment shall have blowers and be properly vented.
- Fuel levels must be maintained as follows:
  - (a) Fuel levels shall be checked to assure adequate fuel is available to complete the day's work and maintain sufficient fuel reserves to allow for a reasonable margin of safety.
  - (b) Fuel used on the outbound trip to the assigned work area shall not exceed one third of the total fuel reserves.
    - (i) The vessel operator shall monitor fuel consumption throughout the work day and begin the inbound transit when the remaining fuel reserves approaches 150% of the fuel quantity used during the outbound transit.
    - (ii) The vessel operator shall account for seas and wind conditions.
  - (c) Portable fuel tanks must be filled on the dock.
  - (d) When fueling the vessel, close all hatches and be sure to turn off engines and any other equipment that could ignite fumes.
  - (e) Smoking is prohibited while fueling at all times and/or within 20 feet of fuel tanks.
  - (f) After fueling, open all hatches to ventilate the vessel, and run the blower for at least four (4) minutes. Check the bilges for vapors before starting your engine. If there are fumes, wait until all traces are eliminated to start the engine.
  - (g) Vessel fuel valves shall be in the closed position when completing boat operations for the night or more than a twelve (12) hour period with the vessel unattended.
  - (h) Absorbent pads shall be available in the event of a fuel spill.
- Safety equipment shall follow USCG and USACE standards. This safety gear will be located, available, and well maintained onboard:
  - (a) First Aid Kit

(b) AED (larger vessels only)

(c) Flares and signaling devices

(d) Floatation devices and Immersion suits

(e) Fire fighting equipment

- When loading, maintain the vessel's load line. Be sure to know the vessel capacity per person and tonnage. Do not overload the vessel. The load shall be evenly distributed to maintain vessel stability.
- All gear shall be properly secured and walkways free of tripping hazards prior to casting lines.
- The vessel shall be in good working condition and hazard-free (including tripping hazards) before casting lines. Upon casting lines, lines shall be properly stowed to prevent tripping hazards.

c) Platform or Floating plants

- Platforms shall be firmly secured.
- Fenders shall be deployed when needed to prevent damage and pinching.
- PFDs shall be worn on platforms without bulwark or guide rails.
- Emergency life saving equipment shall be immediately available in the event of an emergency.
- A life saving skiff shall be on station during platform operations if no other means of recovery is available.
- Axes or other emergency cutting equipment shall be sharp and accessible.

d) Personal Water Craft (PWC) (i.e. kayak, seadoos, etc.)

- Operators should be trained in the use of a PWC and review training video.
- All items listed under "Vessel Operations" shall apply with the exception of fenders and vessel log.
- Additional Personal Protective Equipment (PPE) is required for foul weather (dry suits, etc.).
- PWC shall always be operated in pairs, in the company another vessel, or a shoreside support individual who shall maintain radio contact with the operator at all times.
- Safety shut-off lanyards shall be worn at all times.
- An emergency extraction device shall be on scene and accessible to operators (throw line) or vessel and shoreside support (i.e. line thrower, life sling, life ring, etc.).

e) Shoreside

- For all shoreside activities where possibility of drowning exists, PFDs shall be worn at all times.
- Emergency extraction gear shall be present (i.e. line thrower, life sling, life ring, life skiff, etc.).

f) Safety Gear

- PFDs: USCG-approved international orange Type III personal flotation devices (PFDs) or buoyant work vests are provided to personnel and shall be worn working over, on and/or near water where the danger of drowning exists:
  (a) Examples.
    (i) Floating pipelines, rafts, or float stages
    (ii) Open deck floating plants not equipped with bulwark, guardrails or lifelines
    (iii) On structures, cuts, cliffs, banks or beaches extending over or adjacent to water, except where guardrails or safety nets are provided; or employees are secured to lifelines.
    (iv) In open boats, skiffs, small boats, or launches except when inside an enclosed cabin or cockpit.
  (b) PFDs need not be worn in an enclosed cabin; however they must be readily accessible.
- Ring Buoys: Ring buoys approved by the U.S. Coast Guard with at least 90 feet of line shall be installed at 200-foot intervals on worksites where a water hazard exists.
- In cold water environments, immersion suits shall be onboard for each person. Employees must be trained in their proper use prior to boarding a vessel. See *Figure E Care and Use of Immersion Suits* for further information on their use.
- Additional emergency rescue equipment shall include, but not be limited to throw lines, throw ropes, boat hooks, a tow line, jumper cables, extra paddle or oar, fire extinguisher, bailing device and audible and visual distress signaling devices (e.g. whistle, air horn, orange smoke, flares, etc).
- Inspection and replacement: Prior to and after each use, personal flotation devices and buoyant work vests are inspected for defects that would compromise their safe use. Devices found to have less than 13 pounds buoyancy, or are otherwise defective, shall be removed from service and replaced.
- All reciprocating, rotating and moving parts of winch gears and other equipment shall be properly guarded.

2. SAFE OPERATIONS

a) Severe weather and Natural hazards

- Weather shall be evaluated and monitored via local area weather broadcasts and other readily available weather services by the project manager, field party lead, and vessel operator prior to site arrival and throughout operations to ascertain safe working conditions. An alternate safe harbor shall be designated prior to casting lines in the event of an emergency.
- In deteriorating weather and seas conditions, radio the field office or the USCG with vessel location, direction of travel, and the approximate speed BEFORE a dangerous situation can develop.
- In the event of lightning, assess the threat and cease operations and vacate to a safe area as conditions dictate.
- Before severe weather occurs, firmly secure vessel, platform, or floating plant and all equipment.
- When within the cone for an approaching hurricane and not less than 48 hours from landfall, all personnel are required to cease operations, trailer or move vessels to a secure location, and retreat to a safe harbor location.
- In the event of flooding be cautious of high currents, floating debris or flooded areas with potential obstructions
- In high winds and strong currents be mindful of vessel drift and crabbing.
- Shoreside operations
  (a) Bring two-way radio or cellular phone if coverage is adequate, and complete communications check before operations commence.
  (b) Be aware of surroundings (animals, poison plants, firm ground, slippery surfaces, etc.)

b) Personal Protective Equipment (PPE)

- Wear PPE when required.
  (a) personal floatation devices
  (b) hard hats
  (c) gloves
  (d) extra clothing
  (e) close-toed shoes
  (f) sunglasses and sun screen

c) Water-tight integrity and vessel inspection

- ♦ While vessel is secured to the trailer and backed into the water, inspect the water tight integrity of bilges and drain plugs are not leaking.
- ♦ If at any time the water tight integrity of the vessel is compromised, immediately notify the vessel operator.

d) Rescue Boat or Life-saving skiffs

- ♦ One or more lifesaving boats or skiffs, acceptable to the Site Manager are provided at locations where employees are working over or immediately adjacent to water where a drowning hazard exists.
- ♦ Vessels shall be less than 26ft and use two means of propulsion. Each method of propulsion shall be capable of driving the boat and all the workers from the site.
- ♦ The vessel shall be able to travel upstream at twice the speed of the swiftest water velocity while fully loaded.
- ♦ Persons trained in skiff launching and operations shall remain immediately available during working hours. The skiffs are used only for drills and in emergencies.
- ♦ Lifesaving skiffs have the following equipment on board:
  - (a) Four oars (two if motor powered)
  - (b) Oarlocks attached to the gunwales or to the oars
  - (c) One ball pointed boat hook
  - (d) At least one ring buoy with 90 feet of line attached
  - (e) One life preserver or work vest for each person but never less than a total of two
  - (f) Emergency lighting

e) A-Frame and winch operations

- ♦ Be aware of surrounding work areas
- ♦ Always check with the vessel captain before commencing operations.
- ♦ Always check the locations of all crew members before commencing operations.
- ♦ A-Frames and winches shall be operated by trained personnel.
- ♦ Keep all hands clear from the wire rope. If the rope requires adjustment, use gloves.
- ♦ Wear fitted clothing to prevent loose fabric from getting snagged.
- ♦ Prior to operations, double check the location of each individual on deck in relation to the equipment, and individual and equipment location once operations commence.

- In the event of an injury, operations shall cease and all airborne equipment shall be immediately placed on the deck.

f) Deck lines, rigging, and wire rope

- Be aware of deck surroundings. Keep a clean deck environment!
- Always tie lines off to the dock cleats using at least two figure eights followed by a locking hitch for security. A minimum requirement shall be a bow and stern line for securing vessels.
- Lines shall be stowed appropriately after leaving the dock and underway. Fenders shall be brought aboard and stowed.
- Bitter ends shall be coiled or faked and placed out of the way to prevent tripping hazards.
- When throwing a line ashore, the line shall be thrown to one side of the recipient to prevent injury.
- When working with wire rope use protective gloves to prevent splintering.

g) Safe Watch

- A proper look out shall be maintained at all times.
- During inclement weather, dangerous navigation, night operations, restricted visibility, heavy traffic, dangerous sea states and debris an additional lookout is required (e.g. hydrographer on board in addition to the vessel operator).
- Any obstructions that prohibit a safe watch shall be remedied as soon as possible.

h) Cell Phone Policy

- Prudent cell phones use is advised.
- Cell phones should be used prudently and sparingly at all times.

EMERGENCY PROCEDURES AND RESPONSE

In the event of an emergency bring any gear that may be beneficial to that emergency (i.e. fire extinguisher, flashlight, extra batteries, extra clothing and blankets, maps, flares and first-aid kit, etc.). Take appropriate action for the emergency. *Figure F Emergency Check Off List* contains an emergency check off list of all emergency equipment available. For each project this list should be reviewed and items available checked off and submitted with the *Figure A Float Plan.*

1. DECK SAFETY

a) Always maintain one hand for yourself and one hand for the vessel.

b) Be aware of your position in relation to deck equipment, lines and all ranges of motion.

c) Never put yourself between the vessel and an object (i.e. docks, barges, etc).

d) Life vests shall be worn at all times while on deck or docking.

2. FIRE PREVENTION

a) At least one fire extinguisher shall be available for vessels less than 26ft; two fire extinguishers shall be available for vessels greater than 26ft.

b) Smoking shall be done only in designated smoking areas.

c) Any sign of fire shall be immediately reported to the Captain (i.e. fumes, smoke, flames, etc.)

d) In the event of a fire, use portable Type C fire extinguishers to fight the fire.

e) DO NOT throw water on an electrical fire.

3. RADIO PROCEDURES

a) In the event of an emergency – hail the USCG on Channel 16 using the VHF radio. Have the Float Plan and nature of the emergency ready. You will need it!

b) Remember to key the microphone to talk and let go of the button to receive a response.

c) Use the PANPAN (spoken: pon-pon) call for non-life threatening emergencies, and the MAYDAY for life-threatening emergencies.

- A PANPAN or MAYDAY call shall include: the vessel name, description, position, and nature of distress.
- Example Emergency Call: (Press the microphone) MAYDAY-MAYDAY-MAYDAY. This is the S/V Theory. S/V Theory is a 35ft aluminum catamaran approximately 5 miles from Cape Lookout. The Theory is taking on water and sinking. Requesting assistance from any vessel in the area. MAYDAY-MAYDAY-MAYDAY. Over. (Release the microphone)
- Listen for a response. If the USCG or another vessel does not reply in 10 seconds repeat the MAYDAY call.
- Answer all questions asked on the radio with a clear calm voice. Be patient!

4. MAN OVER BOARD (MOB)

a) In the event a MOB occurs, the person witnessing the MOB shall yell "MAN OVER BOARD"

b) Keep both eyes on the MOB at all times while continuously pointing to the MOB; and also calling out to the Captain the MOB position with regards to the vessel.

c) Retrieval of MOB

- DO NOT get in the water.

- ♦ Position the vessel downwind of the MOB so as not to crush your victim in a strong wind. Stop engines.
- ♦ Use a throwable device (i.e. life ring, or life sling) for retrieval. Throw the device past the MOB and pull them to the vessel.

d) If the victim is unconscious, gently lift them onto a firm surface. Check for signs of life. If no signs are apparent, administer CPR. Seek immediate medical assistance!

5. ABANDONING/CAPSIZING

a) Do not abandon the vessel unless absolutely necessary and not until the last possible moment. If entering the water try not to submerse your head.

b) Throw anything in the water that floats before abandoning to create a large debris field for search and rescue.

c) When possible stay with the vessel in the event of capsizing.

d) Persons shall don survival gear before entering the water, never discard clothing, draw the knees up to prevent heat loss, huddle together for warmth, and activate any emergency locating devices.

6. EXPOSURE TO COLD

Hypothermia and other cold stress symptoms may arise from exposure to low environmental air temperatures or immersion in low temperature water. See tables below for information about cold stress identification and treatment as well as life expectancy due to exposure to cold water.

Cold Stress	Possible Symptoms	Other Signs to Look for in Co-Workers	Treatment
Hypothermia	- Body temperature drops to or below 95° - Fatigue or drowsiness - Confusion - Uncontrolled shivering - Cool bluish skin	- Slurred speech - Clumsy movements - Irritable, irrational or confused behavior Severe Hypothermia - Unresponsive and not shivering	Mild Cases - Move to warm area and stay active - Remove wet clothes and replace with dry clothes or blankets, cover the head - Drink warm sugary drinks, with no caffeine More Severe Cases - Do all of the above, plus contact emergency personnel - Cover all extremities completely - Place very warm objects, such as hot packs or water bottles on victim's head, neck, chest and groin. Arms and legs should be warmed last. Severe Cases - Treat the victim very gently and do not apply external heat to rewarm. Hospital treatment is required. Cases in Water - Call for emergency help, body heat is lost up to 25 times faster in water - Secure collars, belts, hoods, etc. to attempt to maintain warmer water against the body - Keep victim's head out of water and put on a hat or hood - Move all extremities as close to the torso as possible to conserve body heat - Get victim out of the water as quickly as possible, but do not allow victim to swim unless a floating object or person can be reached

Cold Stress	Possible Symptoms	Other Signs to Look for in Co-Workers	Treatment
			because swimming uses the body's heat and reduces survival time by about 50%
Frost Bite	- Tingling, stinging, or aching feeling in exposed area, followed by numbness - Blisters in extreme cases	- Affected area turns red, then purple, then white and is cold to the touch	- Do not rub the area to warm it and do not leave victim alone - Wrap the area in a soft cloth, move victim to warm area, and contact medical personnel - If help is delayed, immerse in warm (max. 105°F) not hot, water - If there is a chance that the affected part will get cold again, do not re-warm. Warming and re-cooling will cause severe tissue damage.
Trench Foot	- Tingling and or itching sensation - Burning, pain, and swelling - Blisters in extreme cases	- Pale, clammy cold skin that is swollen and numb	- Move to a warm, dry area, where the affected tissue can be treated with careful washing, and drying, re-warming and slight elevation - Seek medical assistance as soon as possible.

Estimated Life Expectancy due to Cold Water Exposure		
Temperature (°F)	Minutes to Exhaustion	Minutes of Survival
Below 32	Less than 15	15 - 45
33-40	15 - 30	30 - 90
40-50	30 - 60	60 - 180
50-60	60 - 120	60 - 360
60-70	2 - 7 hrs	2 - 40 hrs
70-80	3 - 12 hrs	3 - indefinite
80 +	Indefinite	Indefinite

7. HEAT SYMPTOMS AND RESPONSE

Excessive exposure to heat and excessive physical work will result in heat-related illness. Heat-related illness may be characterized by an increase in core or "deep body" temperature, heart rate, blood flow to the skin, and water and salt loss due to sweating. These symptoms may be manifested as prickly heat, heat cramps, heat exhaustion or heat stroke, depending upon severity. See table below for information about heat-related illness identification and treatment.

Heat-Related Illness	Possible Symptoms	Other Signs to Look for in Co-Workers	Treatment
Heat Rash	- Red blister-like eruptions - Itching (prickly sensation)		- Rest in a cool place - Allow skin to dry - Monitor for infection
Heat Cramps	- Painful spasm	- Abnormal body posture - Grasping the affected area	- Rest in a cool place - Drink water or a heavily diluted sports beverage (such as Gatorade) - Seek medical attention if cramping is severe or does not go away
Heat Exhaustion	- Weakness - Fatigue - Blurred vision - Dizziness - Headache	- High pulse rate - Extreme sweating - Pale face - Insecure gait - Normal to slightly elevated temperature - Clammy and moist skin	- Lay the person down in a cool, shaded area; do not leave him/her alone - Loosen and remove heavy clothing that restricts evaporative cooling - Give cool water to drink, about a cup every 15 minutes - Fan the worker, spray with cool water, or apply a wet cloth to the skin to increase evaporative cooling - Recovery should be rapid. **Call 911 if the person does not feel better in a few minutes.** - Do not further expose the person to heat that day. Have the person rest and continue to drink cool water.

Heat Stroke	- Rapid pulse
	- Chills
	- Restlessness
	- Irritability
		- Red face
		- Hot dry skin (25%-50% of cases)
		- Disorientation
		- High temperature (104+)
		- Erratic behavior
		- Shivering
		- Collapse
		- Convulsions
		- Fainting
		Heat Stroke may resemble a heart attack.
			Get immediate medical help, call 911 for transport to a hospital as quickly as possible.
			- If the person is alert and not feeling nauseous, have him/her sip cool water.
			- Move the person to a cool, shaded area and remove clothing that restricts cooling
			- Seconds count – Cool the worker rapidly using whatever methods you have available. For example:
			  - Immerse the worker in a tub of cool water;
			  - Place the person in a cool shower;
			  - Spray the person with cool water from a garden hose;
			  - Sponge the worker with cool water;
			  - If the humidity is low, wrap the worker in a cool, wet sheet and fan the person vigorously.
			- Continue cooling until medical help arrives.
			- If emergency medical help is delayed, call the hospital emergency room for further instructions.

8. FIRST AID/CPR/AED

Field personnel are required to maintain First Aid, CPR and AED certification. Apply first aid procedures to cuts, scrapes, burns, breaks, etc as trained.

a) If trained, apply CPR for victims that appear to be unconscious or not breathing. If untrained, seek help immediately.

b) In the event that an AED is available, attach the AED.

9. FLOAT PLAN

a) Each employee must leave information regarding their travel plans with a responsible person that is not traveling with them as an emergency contact.

b) Details about site location, approximate trip duration, arrival and departure times, access points and other important information in the event that the vessel is delayed due to weather conditions, mechanical problems or other emergency, shall be filed with the local field office or appropriate shore side personnel.

c) See *Figure A Float Plan*.

10. SPILL RESPONSE (OIL, CHEMICAL, ETC.)

a) Each vessel shall maintain as up to date copy of the Material Safety Data Sheet (MSDS), which shall include but not be limited to WD40, paint, oil, chemicals, etc.

b) Each vessel shall have onboard the required absorbent pads and any other required clean-up and disposal equipment for fuel, oil, or chemical spills.

11. GROUNDING

a) Vessel: Vessel operator shall inspect the situation (visual or lead line sounding of surrounding depths and obstructions and assure the watertight integrity of the vessel) before making an effort to free the vessel using the engine.

b) PWC: Shut off the engine and notify the other PWC in the area. Make every effort to free the grounded PWC from grounding without entering the water. If stepping off the PWC is required, even in a few feet of water, wait until the other craft is in the area and available to provide assistance or rescue if needed. If a tow is required, connect towline bow to stern of other PWC or vessel in the area. Pull PWC free. Do not untie tow line. Clear intake grates before starting the engine. Start engine. If engine does not start, tow PWC to dock per "l3. TOWING" below.

12. COLLISION

a) All efforts should be made to avoid collision.

b) In the event of a collision, notify the crew and passengers immediately. Notify the USCG immediately using a MAY-DAY distress call on Channel 16.

c) Do not separate the vessels as they may be preventing additional water leakage.

d) Survey damage and attempt to prevent further reduction in water tight integrity.

13. TOWING

a) PWC: PWC engine cooling water supply valve shall be closed to avoid hydro locking the engine. Attach tow line to bow eye of PWC being towed and to the rear cleat of towing PWC. Tow at speed less than 15mph.

b) Vessels: The vessel operator shall tow the drifting vessel astern or at the hip as deemed safe for conditions.

For detailed information see the following documentation available via the internet, the intranet, the DEA Director of Marine Services, or the Project Manager.

1. United States Coast Guard Regulations (Title 33 CFR).
2. USACE "Safety and Health Requirements Manual" (EM-385-1-1), Section 19 "Floating Plant and Marine Activities."
3. The NOAA Small Boat Standards and Procedures Manual.
4. Watercraft and Sport Boats Safety Handbook (219-200-232).
5. Sea Doo Operator's Guide 2002 (219-000-132).

FLOAT PLAN

Complete this plan and leave it with a reliable DEA person who is responsible for notifying the U.S. Coast Guard, or other rescue organization, should you not return as scheduled.

Name and telephone number of person reporting:			
Description of boat:	Color	Trim	Type
Registration Number	Make	Length	Name
Other Information			
Number of Persons Aboard =		Ship Captain:	
Name Age Address & Phone			
Name Age Address & Phone			
Name Age Address & Phone			
Name Age Address & Phone			
Engine Type	No. of Engines	H.P.	Fuel Capacity
Radio YES / NO	Type	Frequencies	
Trip Expectations:	Leave at (time)	From	Going To
Expect to Return by (time)		And in no Event Later Than	
Other Pertinent Information	Trailer License	Type	Automobile License
Color and Make of Auto		Where Parked	
If not returned by (time)	Call the Coast Guard or (local authority). Phone Numbers:		

Figure A

OPERATIONAL SAFETY INSPECTION

DEA SAFETY INSPECTION FOR LAUNCHES, SKIFFS, HULLS, TRAILERS and VEHICLES	Date of Inspection:
Site Manager Name	Project Activity
Inspected by (Signature)	

Safety Item	Initial (Completed)
1. The operator is properly licensed.	
2. The vessel load/carrying capacity documentation is clearly visible and adhered to.	
3. The vessel's water tight integrity has been inspected (i.e. plug, bilge levels).	
4. The vessel's fuel levels and stability have been inspected and properly documented.	
5. All navigation lights, sound signals, radar systems, and depth sounders have been tested, are in proper working order, and logged as such in the vessel log.	
6. All radios have been tested on VHF Channels 16, 13, and any other appropriate working channels for operations.	
7. At least one workingType III or greater PFD containing a whistle and strobe is available for each person on board.	
8. All emergency and life saving equipment is accessible and in working order (First Aid Kit, AED, Flares and signals, Fire Extinguisher, MOB recovery system, immersion suits when required, oars when required, manual bilge pumps, life raft when required, absorbant pads, etc).	
9. Weather forecasts and/or broadcasts have been monitored prior to departure.	
10. The completed float plan has been completed, copied and transferred to shoreside personnel.	
11. Inspect trailer hitch, safety chains, rollers, tires, brakes, lights, suspension, etc. are secure and in working order.	
12. Trailer tongue weight and vehicle hitch are properly sized to support the vessel being towed.	
13.Vehicle is of adequate weight, power, and braking capacity to support the vessel being towed.	

REMARKS:

Figure B

VESSEL INSPECTION GUIDELINES

1. Numbering

Documented vessels; vessel name and hailing port on stern	46 CFR 67.123
Documented vessels; vessel name on port & starboard bow	46 CFR 67.123
Documented vessels; official number on interior structural of hull	46 CFR 67.123
Not documented; state numbers on port and starboard bow (≥ 3" block letters, permanently marked, contrasting background.)	33 CFR 173.27
Not documented; validation sticker displayed (stern)	33 CFR 173.35
Inspection Notes:	

2. Registrations / Documentation

Documented vessels; ≥ 5 net tons, documented for coastwise trade	46 CFR 67.15
Documented vessels; original documentation certificated on board, properly endorsed (e.g. coastwise trade, recreation) and valid.	46 CFR 67.7/163
Not documented; original state numbering certificate on board	33 CFR 173.21
Operator has USCG license (Operator UPV or Master license)	46 CFR 15.605 and .905
License is in operator's possession (framed hanging on bulkhead)	46 CFR 26.20-1(a)
Operator is licensed for waters navigated	46 CFR 15.401
Sufficient number of operators for two watches (if voyage over 12 hours)	46 USC 8104 (b)
Inspection notes: License must be applicable for vessel operation and tonnage. Original license on board. Check SSN and license shall be signed.	

3. Navigation Lights

Proper navigation lights	33 CFR 84
All around anchor light	33 CFR 84

4. Signaling Devices

Whistle or horn	33 CFR 86.23
Bell is required in addition to whistle or horn on vessels ≥ 12 meters (39.4 feet)	33 CFR 86.23
Inspection notes: Athletic whistle not acceptable for vessels ≥ 12 meters (39.4ft). A sound device with same sound characteristics can be used instead of a bell.	

5. Personal Flotation Devices

Type I, II, or III USCG approved PFD of suitable size for each person on board for all vessels less than 40ft in length.	46 CFR 25.25-5(c)(f)
At least 200 sq. cm. of retro-reflective material on each PFD	46 CFR 25.25-13
PFD device light of non-replaceable power source	46 CFR 25.25-15
Readily accessible	46 CFR 25.25-9
In serviceable condition	46 CFR 25.25-11
USCG approved numbers visible	46 CFR 25.25-7
Inspection notes: Type I – Life preserver/jacket, Type II – Buoyant vest, Type III – Floatation aid/marine buoyant device, Type IV – Throwable device/ring buoys/buoyant cushion, Type V – Special use/hybrid inflatable. An approved Type V can be substituted for a Type I if it is worn when the vessel is underway and the wearer is not in an enclosed space. Must be orange to meet USACE requirements.	

Figure C

6. Life Ring Buoy

Throwable life ring required for vessels >26ft	46 CFR 25.25-5(d)
Immediately accessible	46 CFR 25.25-9
Buoyant 3/8" grab line	46 CFR 160.050
USCG approval	46 CFR 160.050
Type I reflective tape	46 CFR 25.25-15
Inspection notes: Must be orange to meet USACE requirements.	

7. Survival Crafts and Rescue Boats

Survival crafts are required for vessels at least 100 gross tons	46 CFR 25.25-17
USCG approved survival crafts	46 CFR 160.051, 151
Rescue boat or skiff available during shoreside operations where danger of drowning occurs.	
Crafts and boats shall carry all required emergency equipment.	
Inspection note: If the vessel carries small boats, the small boats capacity may be counted toward the survival craft requirement.	

8. Fire Extinguishers

USCG approved for portable extinguishers (less than 26 ft requires one Type B-I; 26-40 ft requires two B-I or one B-II if no fixed system is available)	46 CFR 25.30-5(b)
Name plate attached	46 CFR 25.30-10(d)
Minimum number of portable extinguishers	46 CFR 25.30-20(a)(1), (b)(1)
Pressure gauge or indicating device	46 CFR 25.30-10(h)
Proper bracket for extinguisher	46 CFR 162.028-3(g)
Inspection notes: If manufactured date is before 01/01/1965 and not fitted with gauge, must be weighed every 6 months, frangible disk intact and not damaged or leaking (46 CFR 25.30-10(g)).	

9. Visual Distress Signals

Readily accessible	33 CFR 175.120
Date current	33 CFR 175.125
USCG approval	33 CFR 175.128
Inspection notes: 3 day and 3 night or 3day/night combo. Shall be in waterproof case.	

10. Ventilation

Gasoline fuel takes must be properly ventilated	46 CFR 25.40
Blower warning label	33 CFR 183.610(f)
Exhaust blower duct in lower 1/3 of compartment, above bilge water	33 CFR 183.610(d)
Inspection notes: Each fuel tank and engine compartment vented with 2 vents fitted with cowls; 1 exhaust, 1 intake. Fuel lines shall be marine approved, note plastic hoses. Check hoses for holes and leaks. Check direction of exhaust discharge. *See 33 CFR 183.520 and 33 CFR 175.201 for venting fuel tanks.* *Ensure flame screens on vents are properly fitted and not painted over or gummed over.*	

11. Backfire Flame Arrester

Gasoline engines properly installed, serviceable, and in good condition.	46 CFR 25.35-1
Inspection notes: USCG basic approval numbers for arresters 162.015 or 162.041; or fuel induction systems 162.015 or 162.042.	

12. Fuel System

Fuel tank labeled	33 CFR 183.515
Fuel pump not leaking	33 CFR 183.524
Fuel stop valve has manual means of operation	33 CFR 183.528
Fuel lines made of metal or 'USCG Type A1' hose	33 CFR 183.528
Fuel take grounded	33 CFR 183.572
Inspection notes:	

13. Anchor and Anchor Line

Suitable for vessel with sufficient anchor line for area of operations, or sea anchor for deep water operations. Typical anchor rode of 300' plus chain.	

14. Alternative Propulsion

Vessels ≤ 16ft require alternative propulsion (oars, paddles)	
Vessels greater than 16ft shall have alternative propulsion (twin engine or kicker).	

15. Dewatering Device

Ensure pump(s) are in working condition	
One manual bilge pump or bailer must be aboard	

16. Overall Vessel Condition

Check for any visible hull damage before de-trailering	
Check engine hoses for leaks	
Inspection notes: operate sea valves and check engine mount bolts	

17. Electrical Systems

Approved marine alternators	
Battery terminals are covered	33 CFR 183.420 and 445
Inspection notes: Check shore power connection for evidence loose or defective connection. Check wiring and insulation for fraying and secure connections. Batteries shall be boxed/protected.	

18. Galley / Heating Systems

Approved cooking, heating and light systems	46 CFR 25.45-2

19. State Requirements

Numbering and registration per 1 and 2 above.	

20. Marine Sanitation Device

USCG certified marine sanitation device	33 CFR 159.7
Inspection notes: Ensure overboard shut off valve is closed and locked shut.	

21. MARPOL and Pollution Placards

Appropriate MARPOL placard displayed	33 CFR 151.59 (d)
Prohibited discharge warning placard 5"x8"); posted in machinery space or at bilge control station (for vessels > 26ft).	33 CFR 155.450
Inspection notes: Practice proper retention of bilge slops. Retain oily mixtures on board and discharge at reception facility.	

22. Navigation Rules

Vessels ≥ 12m (39.4ft) must have a copy one Inland Navigation Rules aboard	33 CFR 88.05
Vessels ≥ 20m (65ft) required to have bridge to bridge communications (Ch. 13)	33 CFR 26.03

23. FCC Marine Radio License

If required, valid radio station license	47 CFR 80.25

24. Emergency Procedures

Emergency check off list posted in conspicuous location(s)	46 CFR 26.03(a)&(b)
Passenger counts taken	46 USC 3502
Aware of proper accident and casualty reporting	33 CFR 173.59 and 46 CFR 4.05
Aware of proper sexual offense reporting	46 USC 10104

25. Emergency Instructions

Safety orientation given (public announcements/instruction placards)	46 CFR 26.031 (a)
Prior to getting underway, the operator shall ensure that suitable public announcements, instructive placards or both are provided in a manner which affords all passengers the opportunity to become acquainted with: a. stowage locations of life preservers and immersion suits b. proper method of donning and adjusting life preservers and immersion suits c. type and location of all lifesaving devices carried aboard (including EPIRB if available). d. location and contents of the emergency check off list e. location of all signals and signaling kits f. location of all first aid related kits and equipment	

26. USCG Capacity Plate

Visible plate for monohull power vessels <20 ft	33 CFR 183.23
Inspection notes: This plate must be yellow in color and marked with the maximum number of persons capacity in whole numbers of persons and in pounds, the maximum weight capacity in pounds, and the maximum horse-power for that boat or the words "This Boat Not Rated for Propulsion by Motor".	

27. Certificate of Compliance Label

Required for monohull power vessels <20ft	33 CFR 181.7
Inspection notes: The label is affixed by the boat's manufacturer and shall contain the following statement: "This Boat Complies with U.S. Coast Guard Safety Standards in Effect on the Date of Certification".	

28. Hull Identification Number

(Included in #1 Numbering for documented vessels)	33 CFR 181.23

Additional Inspection notes: EPIRB not required on vessels less than 100 gross tons, 46 CFR 25.26-10. Not needed on vessels that operation within a 3nm limit from shore if greater than 100 gross tons.

RADIO USE

The operator, by law, must be familiar with and adhere to the provisions of the Federal Communications Commission. Although possession of the Rules and Regulations is not required, they may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Safety is the primary function of a radiotelephone aboard a boat.

At a minimum, you should:

1. **MAINTAIN A WATCH** while the radio is turned on, even though you are not communicating. Monitoring the Calling and Distress Channel 16 (2182 kHz SSB) is compulsory when the set is on and you are not communicating on another channel.

2. **CHOOSE THE CORRECT CHANNEL** when communicating either ship-to-ship or ship-to-shore.

3. **LIMIT THE PRELIMINARY CALL** to 30 seconds. If there is no answer, you must wait 2 minutes before repeating the call.

4. **LIMIT SHIP-TO-SHIP CONVERSATIONS TO THREE MINUTES** and the content to ship's business. Be considerate of others, they may want to use the line.

5. **REMEMBER THAT PUBLIC CORRESPONDENCE HAS NO TIME LIMIT** (private telephone calls) -The caller is paying the toll.

6. **NEVER USE PROFANE OR OBSCENE LANGUAGE** or transmit fraudulent messages. Penalties include fines up to $10,000 or imprisonment or both.

7. **AVOID RADIO CHECKS** as most are unnecessary. Do not call the US Coast Guard. If a check is really necessary, call a vessel that you know is listening. Radio checks are prohibited on Channel 16.

Logs: It is no longer necessary to keep a log of station operations. The operator may, however, keep a record of any distress or emergency traffic he/she hears or participates in along with a record of maintenance performed on the equipment.

Calling Procedure: The calling procedure has been developed in the interest of brevity. Calls are initiated on the Calling and Distress Frequency (Channel 16). If there is no traffic, begin by calling the name of the boat three times, followed by your boat name and its call sign.

Distress and Safety Calls

In an emergency as part of the marine safety and communication system, you have help on Channel 16 at your fingertips wherever you may be. Emergency situations can be categorized as distress, urgency and safety. The signals for these calls and their descriptions follow:

Distress: "MAYDAY, MAYDAY, MAYDAY." This is the International Distress Signal and is an imperative call for assistance. It is used only when a life or vessel is in immediate danger.

Urgency: "PAN-PAN, PAN-PAN, PAN-PAN" (PAHN PAHN). This in the International Urgency Signal and is used when a vessel or person is in some jeopardy of a degree less than would be indicated by Mayday.

Safety: "SECURITY, SECURITY, SECURITY" (SAY-CURE-IT-TAY). This is the International Safety Signal and is a message about some aspect of navigational safety or a weather warning.

Most boaters never have the need to make a distress call but all should be familiar with the proper procedure. **WHEN YOU NEED IT THERE WILL NOT BE TIME TO LEARN IT.** A "MAYDAY" situation is usually a hectic one, so having a Distress Communication Form partially completed and readily available is a great aid in making an organized distress call. The blanks on the form can be completed in compliance with your vessel data and posted near the radio telephone.

For Urgency (Pan Pan) calls, a format similar to the "Mayday" signal can be used. Safety (Security) messages inform other boaters of abnormal situations relative to safe operation and are the lowest priority of the emergency situations.

Distress calls are initiated on Channel 16 because they should be heard by many boats, as well as the Coast Guard and other shore stations within range. If you receive a distress call, cease all transmission. All vessels having knowledge of distress traffic, and which cannot themselves assist, are forbidden to transmit on the frequency of the distress traffic. They should, however, listen and follow the situation until it is evident that assistance is being provided. Transmitting may resume after hearing an "all clear" (Silence Fini).

"Over and Out"
The most commonly misused procedure words are "Over and Out." "Over" means that you expect a reply. "Out" means you are finished and do not expect a reply. It is contradictory to say "Over and Out."

Radio Abuse
VHF marine radio is a vital communications link for the boating community and abuse of the radio seriously affects the safety of all boaters. There are FCC monitoring stations which, along with the Coast Guard, are alert for understandable language and correct operation of marine stations. Sophisticated equipment provides for tracking violators through "voice prints" of transmissions made on the radio.

Willful or repeat violators may receive a "Notice of Violation" citations, and be fined up to $2,000. The following will improve your radio communications:

- Marine Radio is not Citizens Band (CB), so watch your talk afloat. Phrases such as "Hey Good Buddy," "Bring That Back," "I Copy," and "That's a Big 10-4," are not only frowned upon by the authorities, but are illegal.
- Always use FCC call signals at the beginning and the end of all transmissions.
- Maintain radio watch on Channel 16, and use it only for emergency and calling purposes.

- Switch to one of the working channels for messages. Typically, these are 68, 69, 71, 72 and 78.
- Use low power (1 watt) whenever possible.

Priority list of VHF-FM Channels for Recreational Boats

Channel	Xmit Freq. (MHz)	Rec Freq. (MHz)	Communication Purpose
06	156.300	156.300	Intership safety communications (Mandatory).
09	156.450	156.450	Commercial and non-commercial intership and coast-to-coast (commercial docks, marinas and some clubs); also used by recrational boaters as alternate calling channel. This is also used at some locks and bridges.
12	156.600	156.600	Port Operation, traffic advisory, still being used as channel to work USCG shorestations.
13	156.650	156.650	Navigational, ship's bridge to ship's bridge (1 watt only) Mandatory for ocean vessels, dredges in channels, and large tugs while towing. This is also the primary channel used at locks and bridges.
14	156.700	156.700	Port Operations channel for communications with bridge and lock tenders. Some CG shorestations have this as a working channel.
16	156.800	156.800	**DISTRESS SAFETY AND CALLING** (Mandatory).
22A	157.100	157.100	Primary liaison with USCG vessels and USCG shore stations, and for CG information broadcasts.
24	157.250	161.850	Public telephone (Marine Operator); also Channels 25, 27, 84, 85, 86, 87, 88.
26	157.300	161.900	Public telephone, first priority.
28	157.400	162.000	Public telephone, first priority.
65A	156.275	156.275	Port Operations itership and ship-to-coast); also Channels 20A*, 66A, 73, 74, 77*
67	156.375	156.375	Commercial intership all areas, plus non-commercial intership (Puget Sound and Strait of Juan de Fuca). In the Lower Mississippi River, use limited to navigation bridge-to-bridge navigation purposes (1 watt).
68	156.425	156.425	Non-commercial intership and ship-to-ship coast (marinas, yacht clubs, etc.).
69	156.475	156.475	Non-commercial intership and ship-to-coast.
70	156.525	156.525	Distress and Safety Calling and general purpose calling using Digital Selective Calling (DSC) ONLY.
71	156.575	156.575	Non-commercial intership and ship-to-coast.

Figure D

72	156.625	156.625	Non-commercial intership (2nd priority).
78A	156.925	156.925	Non-commercial intership and ship-to-coast.
79A	156.975	156.975	Commercial intership and ship-to-coast. Non-commercial intership and ship-to-coast.
80A	157.025	157.025	Commercial intership and ship-to-coast. Non-commercial intership on Great Lakes only.
WX-1		162.550	Weather Broadcasts.
WX-2		162.400	Weather Broadcasts.
WX-3		162.475	Weather Broadcasts.

Summary of Emergency Procedures

1. Select Channel 16.
2. Repeat MAYDAY three times.
3. Give vessel name and call sign.
4. Give position.
5. Describe emergency.
6. If no answer, repeat and then try another channel.

Phonetic Alphabet

Alpha	**E**cho	**I**ndia	**M**ike	**Q**uebec	**U**niform	**Y**ankee
Bravo	**F**oxtrot	**J**uliette	**N**ovember	**R**omeo	**V**ictor	**Z**ulu
Charlie	**G**olf	**K**ilo	**O**scar	**S**ierra	**W**hiskey	
Delta	**H**otel	**L**ima	**P**apa	**T**ango	**X**-Ray	

Figure D

CARE AND USE OF IMMERSION SUITS

RUTGERS COOPERATIVE EXTENSION

NEW JERSEY AGRICULTURAL EXPERIMENT STATION

Hypothermia, the lowering of a person's core body temperature, can be a killer for anyone who works or plays outdoors.

Commercial fishermen working away from shore in cold weather have little chance of survival if they fall overboard or have to abandon a sinking ship. Humans rapidly lose heat in cold water and can die in a matter of minutes.

Immersion suits, or survival suits as they are often called by commercial fishermen, can significantly improve survival time in cold water. These suits are often featured in stories about successful sea rescues. Recognizing that hypothermia is a major factor in lives lost at sea, the U.S. Coast Guard now requires immersion suits on documented vessels operating north of 32 degrees North and seaward of the Coastal Boundary Line.

Notwithstanding any requirements, immersion suits are recognized as an important piece of life saving equipment for all fishermen. To be effective, fishermen must keep their suits in good condition, keep them handy and know how to use them.

Proper care and maintenance of immersion suits will extend their working life and possibly your own. Routine suit inspections should include suit material and function of zippers and inflation hoses.

1. Inspect for holes, tears or signs of wear. Suits used in salt water or in pools should be rinsed thoroughly inside and out with fresh water and turned inside out to dry, but not in direct sunlight. Grease and oil should be removed from suits with mild soap. Do not dry clean.

2. Check all zippers for smooth operation. Lubricate zippers with a non-petroleum based product such as canning paraffin, beeswax or substance recommended by the manufacturer.

3. Air bladders provide extra buoyancy and are vitally important in keeping the head out of water when lying horizontally in the water. At least once a year the bladder and inflation hose should

4. Suit repairs are critical and should be made by the manufacturer or a technician experienced in repair of wet suits. Do not tamper with the suit by adding a pocket or changing design, both these actions could cause your suit to lose its Coast Guard approval rating.

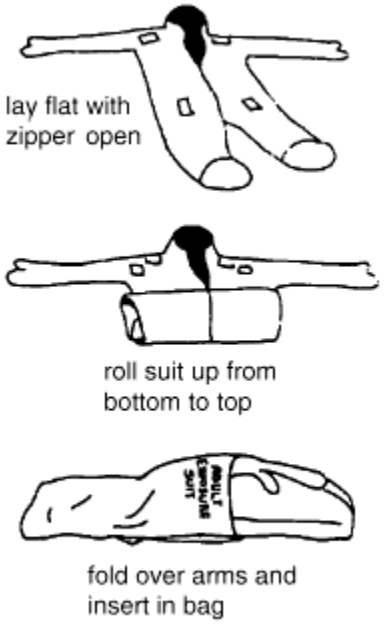

FIGURE 1. Stowing immersion suit

5. Store your suit in an accessible and dry place. Suits should be rolled and stowed in their bags (Figure 1) with the zippers open and zipped up one inch from the bottom. Lubricate snaps and zippers on the bag.

Your immersion suit works properly only when you are wearing it in the water. New safety regulations for documented vessels that operate beyond the boundary lines or with more than 16 people, require monthly drills and instructions for donning immersion suits. First attempts can be awkward and exhausting but with practice you should succeed in getting into a suit in one minute or less. Practice seated donning of suit. This will be the most convenient methods in actual high sea, emergency situation. The following is the instructions for practice seated donning of an Immersion Suit (Figure 2):

FIGURE 2. Donning an immersion suit

STEP 1. Roll suit out on deck and sit on it. Insert your legs into suit using plastic bags to make it easier. Leave on boots and other clothing for insulation and protection in the water.

STEP 2. Place non-dominant arm into suit first (lefties-right and righties-left). Pull hood over head with free hand.

STEP 3. Place dominant arm in last. Pull the zipper up with care and secure flap over your face.

STEP 4. Make sure that all straps and hoses are secure to avoid being snagged or injured. Do not inflate air bladder until you are in the water.

A training variation on this procedure would be to try putting the suit on in the water. Sit on top the suit and slide in one leg at a time. Next insert one arm, put hood over head and then the other arm. Your suit may now be filled with water but your body heat will warm it up.

As of September 15, 1991, the Coast Guard requires all suits to be marked with 31 square inches of retro-reflective material Tape I and II. This will improve your visibility and chances of being picked up. All Coast Guard Approved suits come with the correct amount of retro-reflective tap and should not need any additional. A whistle and strobe light (as required on ocean going vessels) will also help. Suits must be equipped with a Coast Guard Approved PFD light which should be attached to the shoulder area, and have an up-to-date power supply. Suits must also be marked in "block capital letters" with (a) the vessel name, (b) the name of owner of the suit, or

(c) the name of the person to whom the suit is assigned. Check with manufacturer for proper paint or magic marker for your suit.

For proper functioning, be sure your suit fits properly. Check the seams, equipment and fit in your monthly drills. Make repairs immediately. Your life could depend on it.

If you have questions about care of your suit or regulatory requirements, contact the manufacturer or U.S. Coast Guard.

Additional Information:

1. "Atlantic Coast Fishing Vessel Safety Manual." Department of Fisheries, Animal and Veterinary Science, University of Rhode Island. 1990.
2. "Commercial Fishing Industry Vessel Regulations: Immersion Suits." Federal Register, Vol. 57, #149, August 3, 1992.

Stewart M. Tweed - Marine Extension Agent - New Jersey Marine Advisory Service

Mr. Richard C. Hiscock is acknowledged for review of this Fact Sheet.

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Reviewed for NASD: 04/2002

EMERGENCY EQUIPMENT CHECK-OFF LIST

Vessel or Operation: _____

Emergency Equipment	Inspection Results
Number and type of current Fire Extinguishers	
Navigation Lights operational	
Radar, chart plotter and depth sounder operational	
Location of engine fuel emergency shut off switch	
Location of emergency generator shut off switch	
First Aid Kit location	
AED location if required	
Blood Borne Pathogen Kit location	
Signal Flares location and are current	
Emergency Day Signal Flag onboard(large orange flag with black square and circle.)	
Sound Producing Device operational and location	
Number and size of Survival Suits if required	
Number and type of PFDs with light and whistle	
Life raft with current inspection if required	
Designated rescue skiff	
Number of life rings with 90ft line or Life Sling	
Number of life rings	
Line throwing gun if required	
Ball point boat hook onboard	
Manual bilge pump or bailing device onboard	
Adequate number of oars or working alternate propulsion	
Towline ready and accessible	
EPIRB up to date	
VHF Radio operational and emergency numbers posted	
Emergency Procedures Posted	
Float Plan filed	
Satellite phone if required	
Cellular phone	
Spot light functional	
Sufficient number of absorbant pads	
MARPOL signage posted	
Anchor with adequate rode ready and accessible	

Inspector: _____ Date: _____

Project Lead: _____ Date: _____

Figure F

APPENDIX B

Safety and Environmental Meeting Report

Safety and Environmental Meeting Report

(Meeting to be held first workday of each week)

Date: _____

Project Title: Portland Harbor Hydrographic Survey Contract No. _____

DEA Project No: AETR00000034 Task Order No. _____

Strength of Organization: _____ Number of attendants: _____ Mtg. Duration: _____

Names of Attendees:

Safety Subjects Discussed
Environmental Subjects discussed

Signatures of Attendees:

Leader Signature			
Title			

APPENDIX C

Vessel Condition Surveys

INDEPENDENT MARINE SURVEYOR

Nautek Marine

[503] 654-2311 * P.O. Box 68353 * Oak Grove, OR 97268

Marine Survey #17039-A

Date November 21, 2017

A. GENERAL DATA

1. Owner David Evans and Associates — Phone 360-314-3200
2. Address 2801 SE Columbia Way, Suite 130, Vancouver, WA — Zip 97080
3. Year Built 2010 — Builder Duckworth Boat Works, Clarkston, WA -- Offshore model
4. Length 24' — Beam 8' 6" — Draft 24" — Name Broughton — Port Vancouver, WA
5. Hull No. EZX04815D010 — Reg # WN 6915 RN — Stock Boat yes — Material aluminum
6. Type Vessel twin outboards survey vessel — Use survey vessel
7. Surveyed At owner's above address — Afloat no — Hauled on trailer
8. Condition Excellent ☒ — Good — Fair — Poor
9. Present Value $110,500.00 ** see page two for details — Replacement $195,000.00 — Physical Risk Recommended yes

B. HAULED OUT

1. Type Bottom hard chine, semi V
2. Condition of Bottom good
3. Planking aluminum — Paint no
4. Strut no — Bearing --
5. Props 3 blade aluminum — Shaft --
6. Rudders no — Keel aluminum
7. Stern Drives outboard motors

C. EXTERIOR

1. Hull Condition good
2. Planking aluminum — Paint good
3. Stem aluminum — Transom aluminum
4. Deck Fwd aluminum — Aft aluminum
5. Top aluminum — Rails aluminum
6. Flybridge no — Controls single
7. Cabin Structure aluminum
8. Hard Top no
9. Canvas no

D. EQUIPMENT

1. Fire Extinguishers two charged dry chemical
2. Halon or CO_2 no
3. S.S. Radios two VHF — Compass no
4. Fathometer yes — Sniffer no
5. Radar yes — Horn 12V
6. GPS yes — Bell no
7. Lights 12V international
8. Alarm System engines
9. Anchor FX-11 aluminum Fortress
10. Ground Tackle ¼" chain with ½" nylon rode
11. Bilge Pumps three 12V w/two automatic switches

E. INTERIOR

1. Cabins two — Finish paint
2. Galley no — Range no
3. Heating no — Head no
4. Shower no
5. Sewage Disp. Dometic self contained

F. BELOW DECKS

1. Bilge clean and dry
2. Frames no — Spaced --
3. Material -- — Size --
4. Stringers aluminum plate

G. ENGINE ROOM

1. Engines twin gas OB — Type fuel injected 4-stroke
2. Make Yamaha — H.P. Each 115
3. New 03/2010 — Red. Gear no
4. Eng. Serial No. port: 1004643, starboard: 1110906
5. Flame Arresters not required
6. Fuel Lines USCG Type A1 with filter
7. Hours port: 1541, starboard: 1550 on meters
8. Exhaust System raw water cooled
9. Blowers 12V in genset compartment
10. Batteries three 12V in aft compartment
11. Master Switches two — Wiring good
12. Oil Discharge Notice on pilothouse aft bulkhead

H. FUEL

1. Tanks one — Gal. Total 130 — Material aluminum
2. Vent Overboard yes — Valves no
3. Supports aluminum — Filler Cap outboard
4. Fuel Compt. Ventilation atmosphere

I. GENERAL

1. Water Tank no Material --
2. Pressure Water System no
3. Hot Water Tank no
4. Refrigerator no
5. General Maintenance excellent

J. ELECTRICAL

1. Light Plant Westerbeke, mounted on transom in aluminum box with 12V blower
2. Type gas Model SBCG, 5 kw
3. 110V/220V Wiring 110V with GFI receptacles
4. Switches 12V
5. Switch Boards at helm and pilothouse port aft

****

REPORT:

The purpose of this survey is for value and condition.

See the attached addendum for Additional Equipment.

The vessel is used for hydrographic surveys on inland and near coastal waters, is well found, well maintained, stored on its trailer in the company's heated warehouse when not in use and is in excellent condition.

There are no Items Noted recommendations.

Physical risk for insurance coverage is recommended.

Values were arrived at from consulting BUC Used Boat Price Guide, 112th Edition and this surveyor's extensive data base.

Values are as follows:

Vessel and equipment	$95,000.00
Two outboard motors	$10,000.00
Trailer	$ 5,500.00

THIS SURVEY SETS FORTH THE APPARENT CONDITION OF THE VESSEL, INCLUDING HULL, MACHINERY, EQUIPMENT, FITTINGS, AND GEAR, TO THE BEST OF THE SURVEYOR'S ABILITY WITHOUT REMOVAL OF BULKHEADS, PANELING, CEILINGS, OR OTHER PORTIONS OF HER STRUCTURE AND WITHOUT THE OPENING OF HER MACHINERY OR AUXILIARIES FOR INTERNAL EXAMINATIONS OR THEIR OPERATION FOR PERFORMANCE STUDY. IT REPRESENTS THE SURVEYOR'S HONEST AND UNBIASED OPINION, BUT IN SUBMITTING THIS SURVEY, IT IS UNDERSTOOD BY ALL PARTIES CONCERNED THAT THIS SURVEY IS NOT TO BE CONSIDERED A GUARANTEE OF IT'S ACCURACY NOR DOES IT CREATE ANY LIABILITY ON THE PART OF THE SURVEYOR OR HIS EMPLOYERS ARISING OUT OF THE RELIANCE ON INFORMATION CONTAINED IN THIS SURVEY.

Date November 21, 2017

Marine Surveyor

Capt. A. L. "Skeeter" Kershaw
Attending Surveyor

November 21, 2017

Addendum to Nautek Marine survey #17039-A
2010, 24' Duckworth, "Broughton"

ADDITIONAL EQUIPMENT INCLUDES:

Standard Horizon GX2000, VHF transceiver
Standard Horizon GX2100, VHF transceiver with AIS
Raymarine C90W, radar/depth finder/GPS display
Dell 15" flat panel monitor
Furuno Navpilot autopilot with remote control
Teleflex Sea Star hydraulic steering
Minn Kota hydraulic trim tabs with trim angle indicators
ACR E.P.I.R.B. #2DCC7 B6F90 FFBFF with Hydro Fix hydrostatic release mounted on antenna arch, expiration date 05/19/2019
Pro Mariner Pro Save Zinc Saver 30 galvanic isolator
Two Pro Marine Pro Sport 20 automatic battery chargers
Shore power 30 amp cord
Two 12V windshield wipers
Two remote controlled 12V spotlights
Four aluminum lift eyes welded on gunnels
Foredeck aluminum safety rails and pusher knees with neoprene inserts
Aluminum boxed in full swimboard with outboard motor bracket, boarding ladder and transom gate to starboard
Aluminum antenna arch
Aluminum equipment davit with manual winch in starboard cockpit
Lifesling overboard rescue system
One throw ring and four Type-1 life vests
Revere Coastal Contact four person life raft, serial #CCRK217, off vessel being certified
Phillips Heart Start defibrillator kit and a medical kit
Coleman Mach 110V air conditioner
Seats Mariner adjustable spring load helm seat
Two spare outboard motor propellers
Yamaha digital tachometers with speed/trip/fuel flow meters
Gateway Trailers 2010 tandem axle galvanized steel trailer with rail bunks, jack stand, Warn 3700 lb. 12V winch, Dexter Axle break actuator with 12V battery, model EH-1600, spare tire, bearing buddies, loading guides and lights. GVWR 10,400 lbs. Washington license #5772-VV, tagged to 08/2018, VIN #19BB272XAL401177.

Submitted without prejudice,

Capt. A. L. "Skeeter" Kershaw
Attending Surveyor

Nautek Marine

[503] 654-2311 * P.O. Box 68353 * Oak Grove, OR 97268

INDEPENDENT MARINE SURVEYOR

PHOTO RECORD

Survey # 17039-A

Owner: David Evans

Date: 11/21/2017

Photo #7: Genset

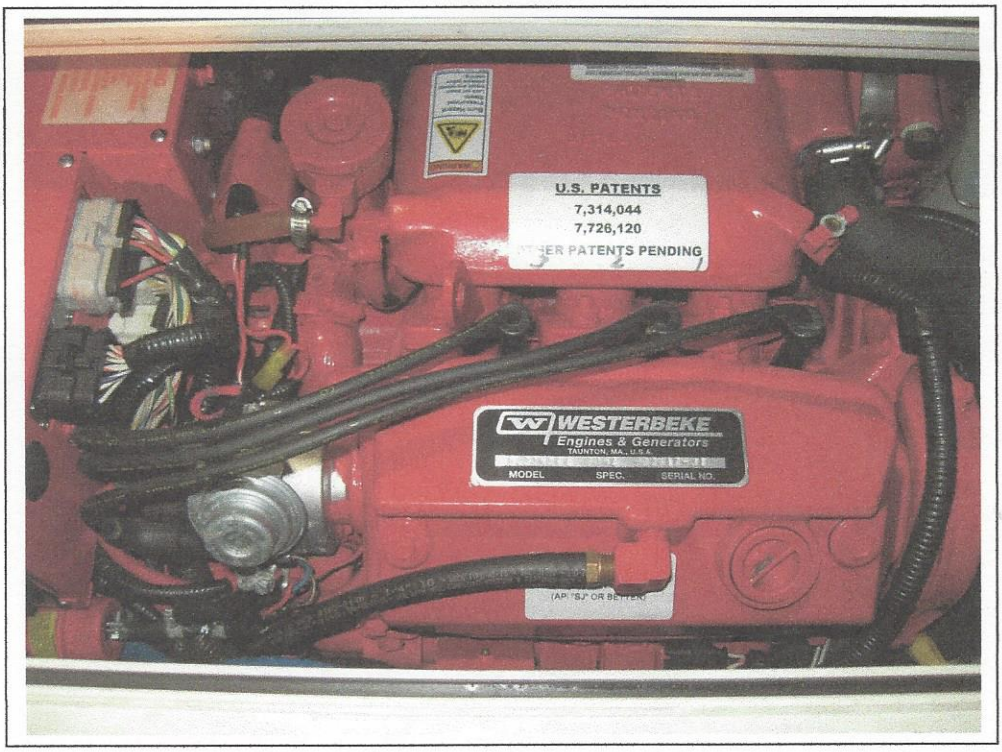
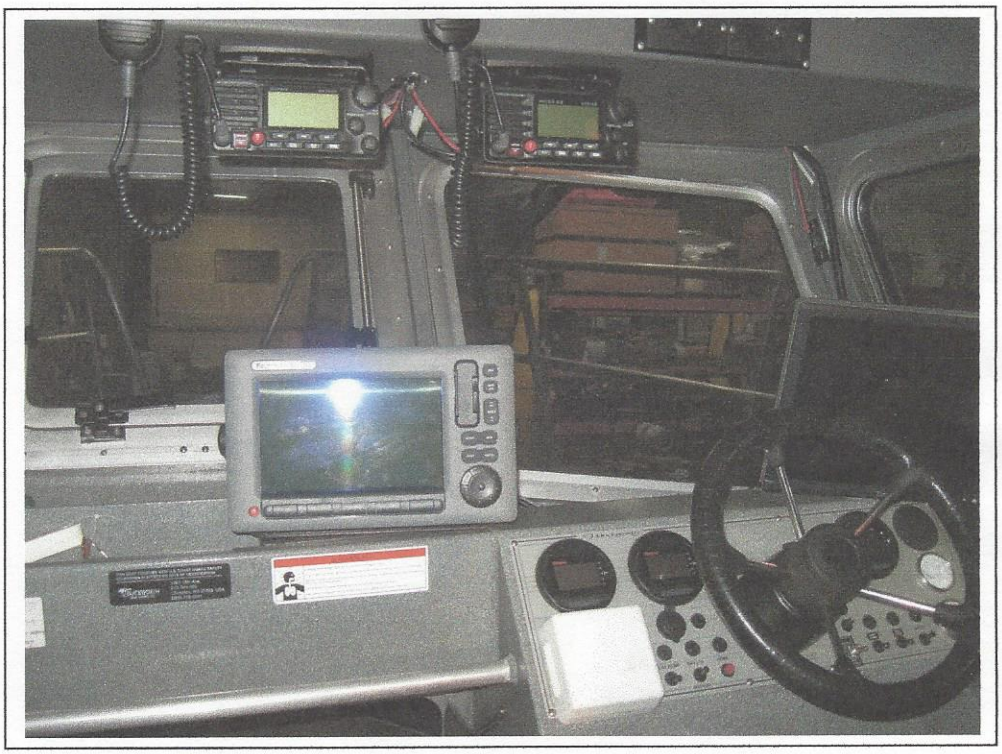


Photo #8: Helm



Nautek Marine

[503] 654-2311 * P.O. Box 68353 * Oak Grove, OR 97268

INDEPENDENT MARINE SURVEYOR

PHOTO RECORD

Survey # 17039-A

Owner: David Evans

Date: 11/21/2017

Photo #1: Vessel

Photo #2: Vessel

Nautek Marine

[503] 654-2311 * P.O. Box 68353 * Oak Grove, OR 97268

INDEPENDENT MARINE SURVEYOR

PHOTO RECORD

Survey # 17039-A

Owner: David Evans

Date: 11/21/2017

Photo #3: Aft cockpit

Photo #4: Hull bottom

Nautek Marine

[503] 654-2311 * P.O. Box 68353 * Oak Grove, OR 97268

INDEPENDENT MARINE SURVEYOR

PHOTO RECORD

Survey # 17039-A

Owner: David Evans

Date: 11/21/2017

Photo #5: Outboard motors

Photo #6: Outboard motors

Nautek Marine

[503] 654-2311 * P.O. Box 68353 * Oak Grove, OR 97268

INDEPENDENT MARINE SURVEYOR

Marine Survey #17038-A

Date November 21, 2017

A. GENERAL DATA

1. Owner David Evans and Associates — Phone 360-314-3200
2. Address 2801 SE Columbia Way, Suite 130, Vancouver, WA — Zip 97080
3. Year Built 2013 Builder River Hawk Boats, White City, OR -- Kenai custom commercial build model
4. Length 19' 5" Beam 7' 8" Draft 1' 7" Name -- Port --
5. Hull No. IPN00716D313 Reg # WN 6797 SA Stock Boat custom Material aluminum
6. Type Vessel outboard powered aluminum skiff Use survey vessel
7. Surveyed At owner's above address Afloat no Hauled on trailer
8. Condition Excellent ____ Good ☒ Fair ____ Poor ____
9. Present Value $42,000.00 ** see page two for details Replacement $80,000.00 Physical Risk Recommended yes

B. HAULED OUT

1. Type Bottom hard chine, shallow V
2. Condition of Bottom good
3. Planking aluminum Paint no
4. Strut no Bearing --
5. Prop no Shaft --
6. Rudder no Keel aluminum
7. Jet Pump on primary outboard motor

C. EXTERIOR

1. Hull Condition good, well maintained
2. Planking aluminum Paint fair
3. Stem aluminum Transom aluminum
4. Deck Fwd. aluminum Aft plywood
5. Top no Glass plastic
6. Flybridge no Controls single
7. Cabin Structure no
8. Hard Top no
9. Canvas bimini

D. EQUIPMENT

1. Fire Extinguisher one charged dry chemical
2. Halon or CO_2 no
3. S.S. Radio VHF Compass no
4. Fathometer LCD Sniffer no
5. Radar no Horn 12V
6. GPS yes Bell no
7. Lights 12V international
8. Alarm System no
9. Anchor snag free type
10. Ground Tackle chain with 9/16" nylon rode
11. Bilge Pump 12V with automatic switch

E. INTERIOR

1. Cabin no Interior Finish paint
2. Galley no Range no
3. Heating no Head no
4. Shower no
5. Sewage Disp. no

F. BELOW DECKS

1. Bilge clean and dry
2. Frames no Spaced --
3. Material -- Size --
4. Stringers no

G. ENGINE ROOM

1. Engine primary Type gas 4-stroke
2. Make Yamaha H.P. 105
3. New 2013 Red. Gear jet pump
4. Eng. Serial No. L 1089330 F
5. Flame Arresters not required
6. Fuel Lines neoprene with filter
7. Hours main motor: 516, kicker: 96 on meters
8. Exhaust System raw water cooled
9. Blower no
10. Battery one 12V
11. Master Switches three Wiring good
12. Oil Discharge Notice not required

H. FUEL

1. Tank one Gallons Total 35 Material aluminum
2. Vent Overboard yes Valves no
3. Supports aluminum Filler Cap outboard
4. Fuel Compartment Ventilation atmosphere

I. GENERAL

1. Water Tank no Material --
2. Pressure Water System no
3. Hot Water Tank no
4. Refrigerator no
5. General Maintenance good

J. ELECTRICAL

1. Light Plant no
2. Type --
3. 110V/220V Wiring no
4. Switches 12V circuit breakers
5. Switch Board on helm

****

REPORT:

The purpose of this survey is for value and condition.

See the attached addendum for Additional Equipment.

The vessel is used for hydrographic surveys on inland and near coastal waters, is well found, well maintained, stored on its trailer in the company's heated warehouse when not in use and is in good condition.

There are no Items Noted recommendations.

Physical risk for insurance coverage is recommended.

Values were arrived at from consulting BUC Used Boat Price Guide, 112th Edition and this surveyor's extensive data base.

Values are as follows:

Vessel and equipment	$30,000.00
Kicker outboard motor	$ 1,500.00
Primary outboard motor	$ 8,000.00
Trailer	$ 2,500.00

THIS SURVEY SETS FORTH THE APPARENT CONDITION OF THE VESSEL, INCLUDING HULL, MACHINERY, EQUIPMENT, FITTINGS, AND GEAR, TO THE BEST OF THE SURVEYOR'S ABILITY WITHOUT REMOVAL OF BULKHEADS, PANELING, CEILINGS, OR OTHER PORTIONS OF HER STRUCTURE AND WITHOUT THE OPENING OF HER MACHINERY OR AUXILIARIES FOR INTERNAL EXAMINATIONS OR THEIR OPERATION FOR PERFORMANCE STUDY. IT REPRESENTS THE SURVEYOR'S HONEST AND UNBIASED OPINION, BUT IN SUBMITTING THIS SURVEY, IT IS UNDERSTOOD BY ALL PARTIES CONCERNED THAT THIS SURVEY IS NOT TO BE CONSIDERED A GUARANTEE OF IT'S ACCURACY NOR DOES IT CREATE ANY LIABILITY ON THE PART OF THE SURVEYOR OR HIS EMPLOYERS ARISING OUT OF THE RELIANCE ON INFORMATION CONTAINED IN THIS SURVEY.

Date November 21, 2017

Marine Surveyor

Capt. A. L. "Skeeter" Kershaw
Attending Surveyor

November 21, 2017

Addendum to Nautek Marine survey #17038-A
2013, 19' River Hawk, WN 6797 SA

ADDITIONAL EQUIPMENT INCLUDES:

Standard Horizon Explorer VHF transceiver
Garmin 546S depth finder/GPS/split screen
Two 12V windshield wipers
Walk through forward windshield
Aluminum antenna/equipment arch
Two aluminum davits with manual winch to starboard, 12V winch to port aft
Four aluminum welded on lifting eyes
Two Smove Moves adjustable helm seat mounts
Yamaha 2013, 9.9 hp, 4 stroke gas outboard motor with power tilt and steering, 96 hours on meter and spare three blade aluminum propeller, serial #1019948
River Hawk Boats Custom Trailers/Fabrique Par Karavan Trailers 2012 single axle galvanized steel with rail bunks, jack stand, manual winch, spare tire, loading guides, hinged tongue, bearing buddies and lights. Oregon license #3014-YH, tagged to 5/2018, 3420 lb. GVWR, serial #5KTBS2310DF646784

Submitted without prejudice,

Capt. A. L. "Skeeter" Kershaw
Attending Surveyor

Nautek Marine

[503] 654-2311 * P.O. Box 68353 * Oak Grove, OR 97268

INDEPENDENT MARINE SURVEYOR

PHOTO RECORD

Survey # 17038-A

Owner: David Evans

Date: 11/21/2017

Photo #7: Cockpit

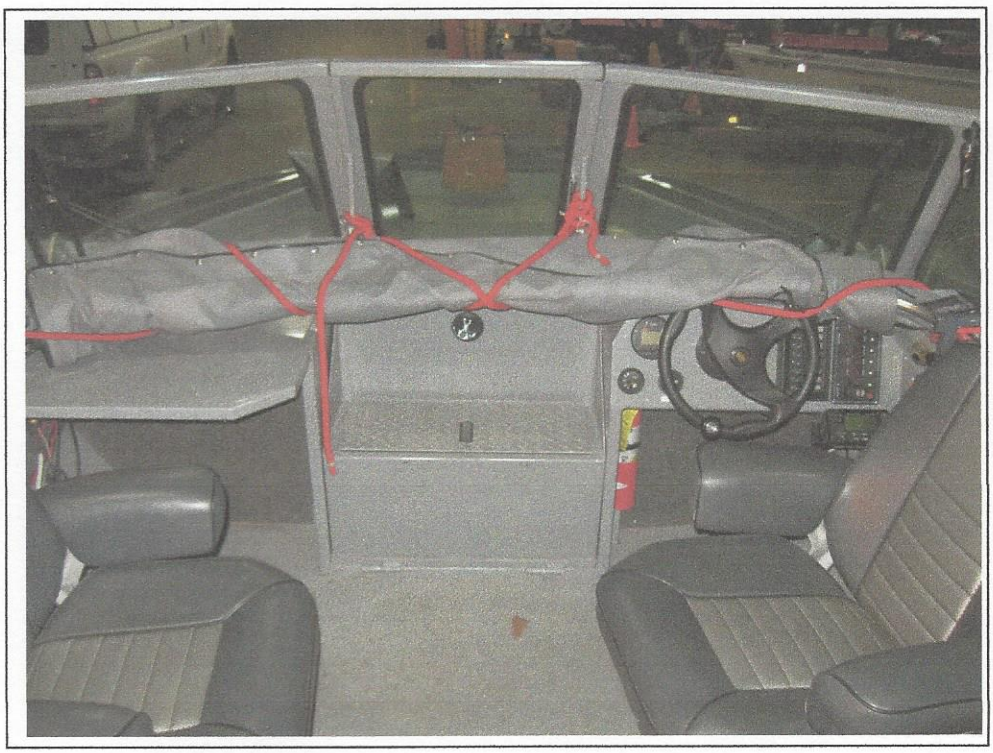


Photo #8: Helm

Nautek Marine

[503] 654-2311 * P.O. Box 68353 * Oak Grove, OR 97268

INDEPENDENT MARINE SURVEYOR

PHOTO RECORD

Survey # 17038-A

Owner: David Evans

Date: 11/21/2017

Photo #5: 9.9 hp motor

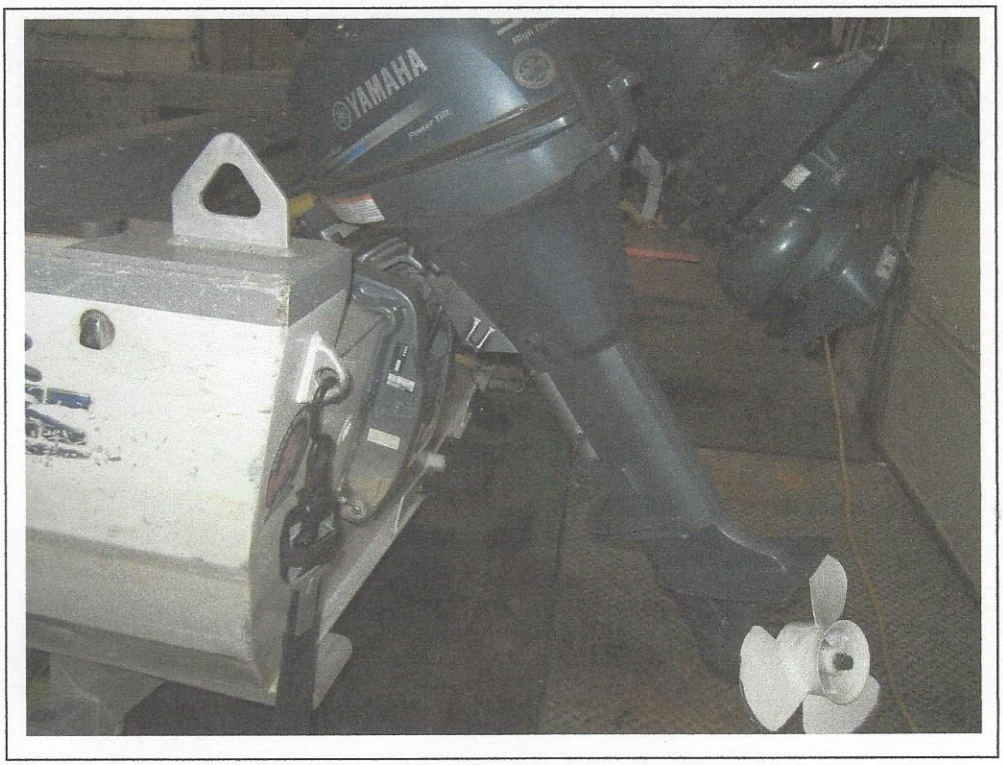


Photo #6: 105 hp motor

Nautek Marine

[503] 654-2311 * P.O. Box 68353 * Oak Grove, OR 97268

INDEPENDENT MARINE SURVEYOR

PHOTO RECORD

Survey # 17038-A

Owner: David Evans

Date: 11/21/2017

Photo #1: Vessel

Photo #2: Vessel

Nautek Marine

[503] 654-2311 * P.O. Box 68353 * Oak Grove, OR 97268

INDEPENDENT MARINE SURVEYOR

PHOTO RECORD

Survey # 17038-A

Owner: David Evans

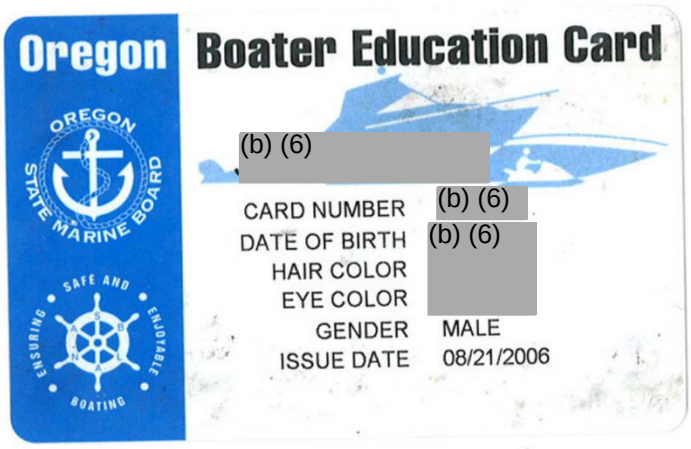
Date: 11/21/2017

Photo #3: Hull bottom

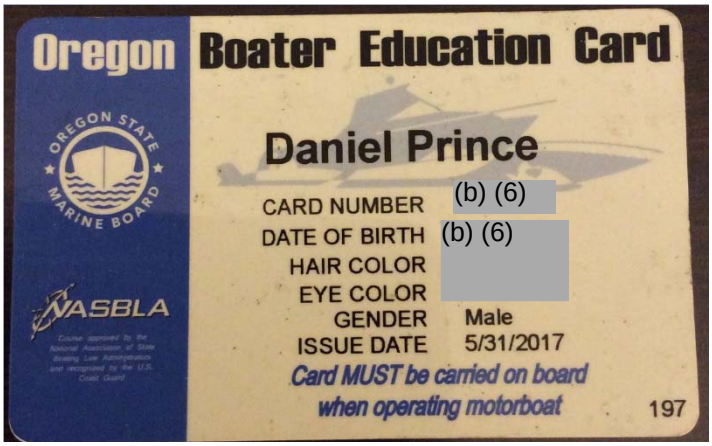
Photo #4: Hull numbers

APPENDIX D

State Boating Cards

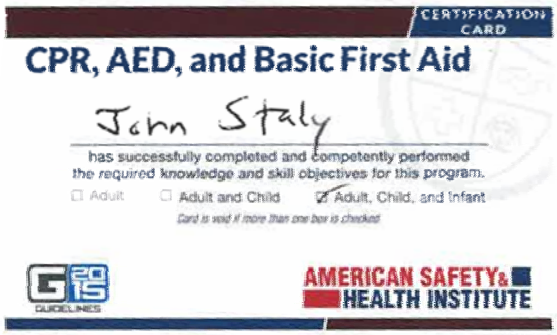

Oregon
Boater Education Card
OREGON STATE MARINE BOARD
SAFE AND ENJOYABLE BOATING
ENSURING
(b) (6)
CARD NUMBER (b) (6)
DATE OF BIRTH (b) (6)
HAIR COLOR
EYE COLOR
GENDER MALE
ISSUE DATE 08/21/2006


WASHINGTON STATE BOATER EDUCATION CARD
(b) (6)
Boater EC Number
(b) (6)
(b) (6)
VANCOUVER, WA 98663
Date of Issue
02/17/2015
Sex
M
Eyes
Hair
(b) (6)
Date of Birth
(b) (6)


Oregon
Boater Education Card
OREGON STATE MARINE BOARD
NASBLA
Daniel Prince
CARD NUMBER (b) (6)
DATE OF BIRTH (b) (6)
HAIR COLOR
EYE COLOR
GENDER Male
ISSUE DATE 5/31/2017
Card MUST be carried on board when operating motorboat
197

APPENDIX E

First-Aid, CPR, and AED Training Certification Cards



CERTIFICATION CARD

CPR, AED, and Basic First Aid

John Staly

has successfully completed and competently performed the required knowledge and skill objectives for this program.

☐ Adult ☐ Adult and Child ☑ Adult, Child, and Infant

Card is void if more than one box is checked.

2015 GUIDELINES

AMERICAN SAFETY & HEALTH INSTITUTE

CODE 3 Training

(b) (6)

Registry No.

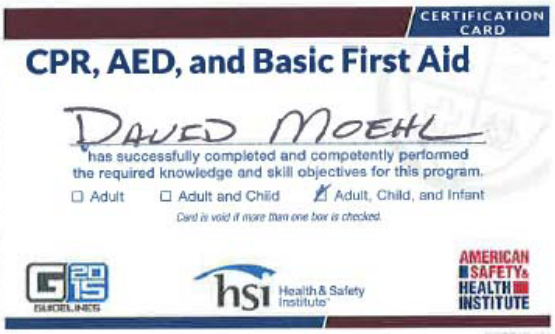
2/9/2017 — Class Completion Date

2/9/2019 — Expiration Date

360-281-6428 — Training Center Phone No.

305625 — Training Center I.D.

This card certifies the above named individual has successfully completed the required objectives and hands-on skill evaluations to the satisfaction of a currently authorized ASHI Instructor. This program conforms to the *2015 AHA Guidelines Update for CPR and ECC* and the *2015 AHA and ARC Guidelines Update for First Aid*. This program is not designed to meet pediatric first aid training regulatory requirements and should not be used for that purpose. Expiration date may not exceed two years from month of class completion.



CERTIFICATION CARD

CPR, AED, and Basic First Aid

DAVID MOEHL

has successfully completed and competently performed the required knowledge and skill objectives for this program.

☐ Adult ☐ Adult and Child ☑ Adult, Child, and Infant

Card is void if more than one box is checked.

2015 GUIDELINES

hsi Health & Safety Institute

AMERICAN SAFETY & HEALTH INSTITUTE

CODE 3 Training

(b) (6)

Registry No.

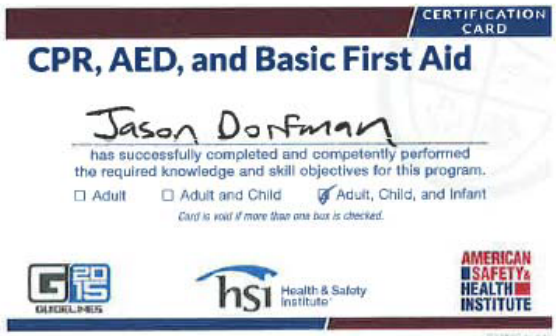
12-19-2017 — Class Completion Date

12-2019 — Expiration Date

360-281-6428 — Training Center Phone No.

305625 — Training Center I.D.

This card certifies the above named individual has successfully completed the required objectives and hands-on skill evaluations to the satisfaction of a currently authorized ASHI Instructor. This program conforms to the *2015 AHA Guidelines Update for CPR and ECC* and the *2015 AHA and ARC Guidelines Update for First Aid*. This program is not designed to meet pediatric first aid training regulatory requirements and should not be used for that purpose. Expiration date may not exceed two years from month of class completion.



CERTIFICATION CARD

CPR, AED, and Basic First Aid

Jason Dorfman

has successfully completed and competently performed the required knowledge and skill objectives for this program.

☐ Adult ☐ Adult and Child ☑ Adult, Child, and Infant

Card is void if more than one box is checked.

2015 GUIDELINES

hsi Health & Safety Institute

AMERICAN SAFETY & HEALTH INSTITUTE

CODE 3 Training

(b) (6)

Registry No.

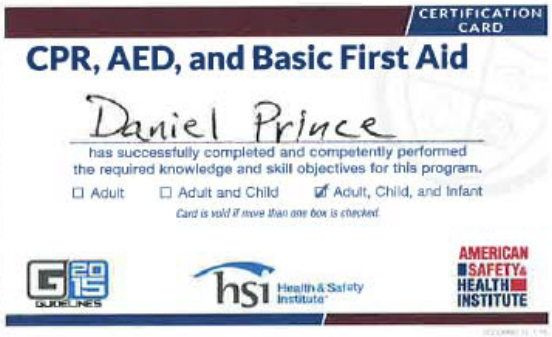
12-19-2017 — Class Completion Date

12-2019 — Expiration Date

360-281-6428 — Training Center Phone No.

305625 — Training Center I.D.

This card certifies the above named individual has successfully completed the required objectives and hands-on skill evaluations to the satisfaction of a currently authorized ASHI Instructor. This program conforms to the *2015 AHA Guidelines Update for CPR and ECC* and the *2015 AHA and ARC Guidelines Update for First Aid*. This program is not designed to meet pediatric first aid training regulatory requirements and should not be used for that purpose. Expiration date may not exceed two years from month of class completion.



CERTIFICATION CARD

CPR, AED, and Basic First Aid

Daniel Prince

has successfully completed and competently performed the required knowledge and skill objectives for this program.

☐ Adult ☐ Adult and Child ☑ Adult, Child, and Infant

Card is void if more than one box is checked.

2015 GUIDELINES

hsi Health & Safety Institute

AMERICAN SAFETY & HEALTH INSTITUTE

CODE 3 Training

(b) (6)

Registry No.

12-19-2017 — Class Completion Date

12-2019 — Expiration Date

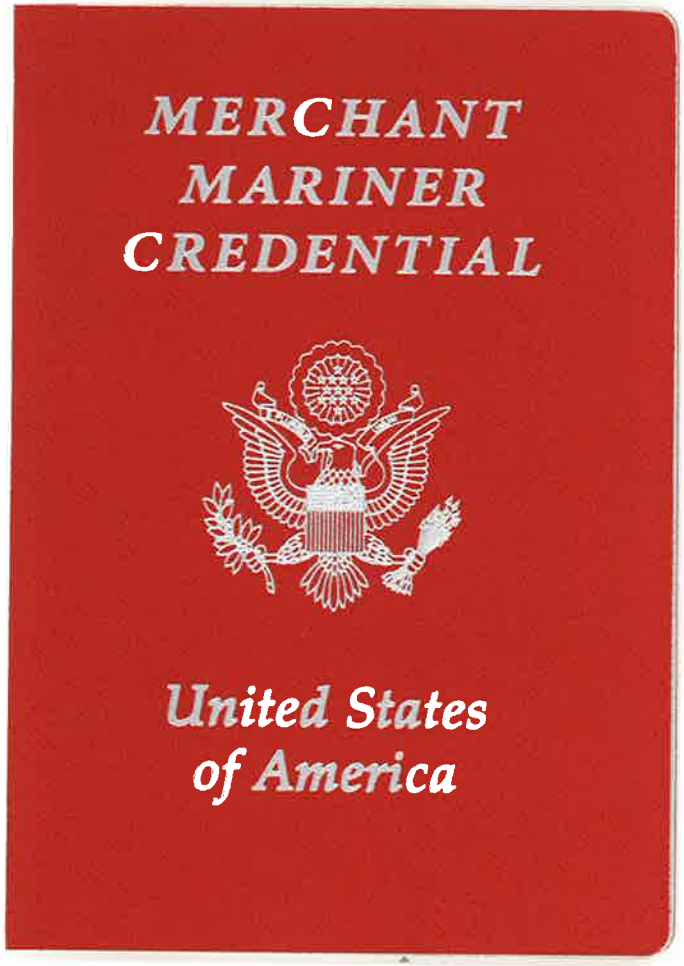
360-281-6428 — Training Center Phone No.

305625 — Training Center I.D.

This card certifies the above named individual has successfully completed the required objectives and hands-on skill evaluations to the satisfaction of a currently authorized ASHI Instructor. This program conforms to the *2015 AHA Guidelines Update for CPR and ECC* and the *2015 AHA and ARC Guidelines Update for First Aid*. This program is not designed to meet pediatric first aid training regulatory requirements and should not be used for that purpose. Expiration date may not exceed two years from month of class completion.

APPENDIX F

US Coast Guard License


MERCHANT
MARINER
CREDENTIAL
United States
of America

UNITED STATES COAST GUARD

MERCHANT MARINER CREDENTIAL

U.S. DEPT. OF HOMELAND SECURITY, USCG, CG-4610

IF FOUND, PLEASE RETURN TO:

COMMANDING OFFICER
UNITED STATES COAST GUARD
NATIONAL MARITIME CENTER
100 FORBES DRIVE
MARTINSBURG, WV 25404-7120

POSTMASTER: POSTAGE WILL BE PAID BY ADDRESSEE

THIS DOCUMENT IS A SEAFARERS' IDENTITY DOCUMENT FOR THE PURPOSE OF THE SEAFARERS' IDENTITY DOCUMENTS CONVENTION (REVISED), 2003, OF THE INTERNATIONAL LABOR ORGANIZATION.

I DO SOLEMNLY SWEAR OR AFFIRM THAT I WILL FAITHFULLY AND HONESTLY, ACCORDING TO MY BEST SKILL AND JUDGMENT, AND WITHOUT CONCEALMENT AND RESERVATION, PERFORM ALL THE DUTIES REQUIRED OF ME BY THE LAWS OF THE UNITED STATES. I WILL FAITHFULLY AND HONESTLY CARRY OUT THE LAWFUL ORDERS OF MY SUPERIOR OFFICERS ABOARD A VESSEL.

(b) (6)

(b) (6)

The lawful holder of this credential,

DAVID THOMAS MOEHL

as endorsed below, is entitled under Title 46 (Shipping) U.S. Code to serve in the capacity or capacities specified (National Only), subject to any limitations indicated.

CAPACITY	LIMITATIONS APPLYING (IF ANY)
Master	Of Self-Propelled Vessels Not Including Auxiliary Sail Of Less Than 100 Gross Register Tons (GRT) Upon Near Coastal Waters.
Ordinary Seaman	
Wiper	
Steward's Department (F.H.)	

Ref Num (b) (6)

Serial Num (b) (6)

4

K. R. Martin

KIRSTEN R. MARTIN, CAPT, USCG

Ref Num (b) (6)

Serial Num (b) (6)

5

APPENDIX G

Job Hazard Assessment (JHA)

Americas

Pre-Job Hazard Assessment

S3AM-209-FM4

Location: Bathymetric Survey on Willamette River, Portland, Oregon **Date:** March 5, 2018

Prepared By: Nicky Moody and Jon Dasler **Approved By:** Jennifer Pretare

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
List principal activities involved in the scope of work	Identify each safety or health hazard		Identify engineering and administrative controls and any specific Personal Protective Equipment (PPE) that is required	
ACTIVITY 1 – Mobilize personnel and equipment to study area.	Traffic/driving hazards	10	• All drivers must have current, valid driver's license on their person. • Complete pre-use visual inspection. Walk around the vehicle to inspect for potential hazards or mechanical issues before driving. • Practice defensive driving and drive in a courteous manner. • Seat belts must be worn by the driver and all passengers. • Obey all speed limits. • Drivers must not use cellular telephones or other communication devices such as two-way radios unless safely parked. • Window surfaces must be cleared of any materials such as ice, frost, mud, or water that can impair visibility. • Travel with headlights on at all times. • Travel during daylight hours when possible. • Equip vehicles with: first aid kit, fire extinguisher, flares or triangle, spare tire and jack, cell phone. • Limit activities to no more than 10-hour days. Implement fatigue management plan for >12 hour days.	5
	Parking hazards	10	Park in a clear location, and back in to parking location to avoid backing out upon departure	3
	Lifting hazards/muscle strain	6	• Practice proper lifting and manual handing of materials and equipment, lift with the knees, avoid twisting, and seek assistance or employ additional handling equipment as needed. • Wear abrasion gloves when moving equipment. No personnel should lift more than 40 pounds without assistance or mechanical aid. Know what items weigh before lifting or test them carefully.	3
ACTIVITY 2 – Hold Tailgate Safety Briefings and perform daily Task Hazard Analysis; review applicable Safety, Health, and Environment Procedures; inspect and don PPE; inspect vessel, tools and equipment.	Incorrect PPE usage	10	Safety Officer should check that required PPE is being used.	1
	Equipment malfunction	10	User (AECOM and/or Subcontractor Personnel) should inspect vessel, tools and equipment before use.	1
	Lack of knowledge of tasks being performed	10	Discuss tasks to be performed by personnel, potential hazards, and control measures.	1
	Potential incidents and emergencies	10	• Follow daily safety briefing, have personnel sign attendance form, which will be maintained onsite. • Inform workers of emergency contact information, emergency procedures, and hospital route.	5
	Severe weather	10	Include discussion of severe weather hazards in daily safety briefing and monitor throughout the duration of the task. Implement severe weather procedures as applicable.	5

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
	Potential contaminant exposure	10	Inform workers of potential for contaminant exposure and implement contaminant exposure avoidance procedures outlined in HASP, as applicable.	3
ACTIVITY 3 – Evaluate area for hazards (this should be performed regularly throughout the duration of the task).	Slips, trips, and falls	8	Personnel should identify and take measurable cautionary steps to observe areas for hazards: ensure pathways are clear and free of obstruction prior to initiating work, ensure all lines are secure prior to initiating work, and adhere to proper housekeeping practices.	4
	Heat stress/cold stress	10	• Begin heat stress/cold stress monitoring as applicable and continue throughout duration of task. • Implement heat stress/cold stress prevention procedures, as applicable. • Heat stress: drink plenty of fluids and use appropriate work/rest schedule. • Cold stress: dress in appropriate cold-weather clothing and bring change of dry clothing stored in waterproof bag or stored in a dry place aboard the vessel.	3
	Water hazards	10	• Follow all appropriate water safety rules and regulations. • USCG Type III or IV approved flotation device will be worn when working near or over water.	5
	Severe weather	10	Assess severe weather hazards and implement appropriate severe weather procedures.	5
	Potential contaminant exposure	1	Maintain awareness of potential contaminant exposure and implement contaminant avoidance procedures.	3
ACTIVITY 4 – Load personnel and equipment onto vessel.	Lifting hazards/muscle strain/ergonomics hazards	10	• Practice proper lifting and manual handing of materials and equipment, lift with the knees, avoid twisting, and seek assistance or employ additional handling equipment as needed. • Wear abrasion gloves when moving equipment. • No personnel should lift more than 40 pounds without assistance or mechanical aid. Know what items weigh before lifting or test them carefully. • Transfer equipment to people on boat rather than carrying equipment onto boat.	3
	Vessel boarding hazards	10	• Receive vessel operator's training prior to boarding vessel. • Follow vessel operator's instructions for boarding vessel • USCG Type III or IV approved flotation device will be worn • Maintain three points of contact when boarding vessel. • Follow vessel operator's instructions for loading equipment onto vessel.	4
	Pinch points/hand injuries	8	Be aware of hands, feet, arms, and position of all personnel during tool use and equipment handling. Never position a hand where it can be pinched if a wheel rotates, a load releases, or a tool slips.	4
	Slips, trips, and falls	8	• Wear appropriate footwear with non-slip soles. • Ensure pathways are clear and free of obstruction prior to initiating work, ensure all lines are secure prior to initiating work, and adhere to proper housekeeping practices. • Maintain three points of contact when boarding vessel.	4
ACTIVITY 5 – Work aboard a research vessel on water.	Slips, trips, and falls	8	• Wear appropriate footwear with non-slip soles. • Ensure pathways are clear and free of obstruction prior to initiating work, ensure all lines are secure prior to initiating work, and adhere to proper housekeeping practices. • Maintain three points of contact at all times.	4
	Lines under tension/line of fire	10	Avoid keeping lines/ropes/cables under tension. Keep as much distance as possible between you and any source of potential energy release.	4

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
	Moving parts/pinch points/hand injuries	8	Be aware of hands, feet, arms, and position of all personnel during tool use and equipment handling. Never position a hand where it can be pinched if a wheel rotates, a load releases, or a tool slips.	4
	Water hazards	10	• Adhere to all federal, state, and local boating and licensing laws. • Work must be performed in accordance with the "Buddy System" Regulations. • US Coast Guard (USCG)-approved PFD, sized and adjusted to the wearer, shall be worn by all workers when aboard the research vessel unless inside an enclosed cabin or behind railing. • Vessel operator will provide a SH&E Orientation on boating operations prior to departing dock, which will cover the following: man overboard, power loss/disabled boat, fire onboard, medical emergency. • Vessel operator will submit a float plan to the Project Manager and follow the float plan and communication plan identified in the float plan. • Ring buoys with at least 90 feet of line or a Life Sling shall be provided and readily available for emergency rescue operations. • Ensure vessel has secondary means of propulsion such as twin engines, kicker motor, oars or paddles. • During high speed transit, the vessel operator shall check that all passengers are secure before coming up to speed and remain secure during the transit.	4
	Man overboard (MOB)/incapacitated person	10	Vessel operator will review USCG MOB procedures: • No low visibility/night operations will occur. • When deploying equipment, wear appropriate PPE (USCG Type III or IV life jacket, slip and abrasion resistant gloves, etc.). • When boat is transiting at high speeds, all people must remain in the cabin seated or standing maintaining four points of contact; no work on deck may occur. • All staff aboard vessel will be trained in MOB recovery training. • Perform safety briefing prior to departure and discuss MOB recovery procedure. • USCG Type III or IV PFD will be worn when outside of the cabin/wheelhouse or on dock • Life jackets shall be immediately available near exist inside vessels with cabins. • Person who observes person fall overboard must keep their eyes on him/her. • Immediately cease work operations and commence rescue procedures. • Immediately mark MOB location on GPS by "one-button *MOB or MARK* press". • Deploy Life Sling and circle person in water. • Bring the vessel to the position down current of the person in the water (as opposed to having the person swim to the boat) and disengage propulsion as person nears vessel. • Throw a flotation rings and other floating objects into the water to denote the location of the person overboard and to alert other boat traffic. • Throw PFDs or other floatable items into the water to assist the person overboard. • Send a distress call on Channel 16 if person is un-responsive or severely injured.	3

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
	Boat in danger of sinking	10	Vessel operator will be responsible, however, if the vessel crew is incapacitated the following procedure shall be followed: • Donning of life jackets or immersion suits • Send a distress call: PAN call over VHF Channel 16 if boat is not in imminent danger. • Send a distress call: MAYDAY call over VHF Channel 16 if boat or crew is in imminent danger. • Turn on the bilge pump to begin pumping water to outside of boat. • Assemble the emergency pump and begin pumping water.	4
	Vessel fire	10	Review fire extinguisher location and quantity and confirm fire extinguishers are charged prior to leaving dock. In the event of fire, access fire containment ability and if large and danger of explosion prepare to abandon ship. If fire is containable, attempt to extinguish fire. Remember P.A.S.S: • **P**ull the Pin • **A**im the fire extinguisher at the base of the fire • **S**queeze the handle • **S**weep the base of fire side to side Hail for help **See Distress Call Form MAYDAY (life/death) or PAN (assistance required, not life and death).** Inflate life raft/abandon ship if necessary (e.g. risk of explosion).	5
	Medical emergency	8	• Review first aid kit location and contents prior to departure. • AED shall be readily available if vessel is greater than 20 feet. • If appropriate, initiate a 911 call and transit vessel to Swan Island boat ramp for EMS assistance. • If a severe injury occurs, and a water rescue is needed initiate a MAYDAY call. • Contact the AECOM Incident Reporting line after the emergency has been addressed.	4
	Heat stress/cold stress	10	• Begin heat stress/cold stress monitoring as applicable and continue throughout duration of task. • Implement heat stress/cold stress prevention procedures, as applicable. • Heat stress: drink plenty of fluids and use appropriate work/rest schedule. • Cold stress: dress in appropriate cold-weather clothing and bring change of dry clothing stored in waterproof bag. Review the cold stress management plan in Section 3.14.1 of the Programmatic HASP.	5
	Severe weather hazards	10	Include discussion of severe weather hazards in daily safety briefing and monitor throughout the duration of the task. Implement severe weather procedures as applicable. Stop work during severe weather.	4
	Other commercial/recreational vessel traffic hazards	10	Adhere to all federal, state, and local boating and licensing laws.	5
	Potential contaminant exposure (contaminated media)	10	• Awareness level training will be provided to the bathymetry Crew. Sediments and porewater are considered contaminated media, Avoid all contact with sediment and porewater. • Bathymetry survey crew is not anticipated to come into contact with potential chemical hazards. If scope of work changes or contact with contaminated media (i.e. sediment or porewater), immediately stop work and contact Jennifer Pretare.	3

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
	Potential chemical exposure (support substances for project including fuel for vessels)	10	• While fueling, there is potential exposure to gasoline fuel. • All crew members will remain upwind from the fueling operation. • Nitrile gloves will be worn while fueling the vessel • For incidental spill response procedures, refer to section 12 of the programmatic HASP. • Any impacted material following an incidental spill will be disposed of appropriately.	3
	Lifting hazards/muscle strain/ergonomic hazards	6	• Practice proper lifting and manual handing of materials and equipment, lift with the knees, avoid twisting, and seek assistance or employ additional handling equipment as needed. • Wear abrasion gloves when moving equipment. • No personnel should lift more than 40 pounds without assistance or mechanical aid. Know what items weigh before lifting or test them carefully. • Transfer equipment to people on boat rather than carrying equipment onto boat.	3

SPECIAL REQUIREMENTS

Step #	Equipment to be Used	Inspection Requirements	Training Requirements
	List equipment to be used in work activity	List inspection/permit requirements for work activity	List training requirements including hazard communication
1.	Research vessel	Perform boat inspection prior to use. Complete and submit float plan prior to use.	USCG-licensed vessel operator or equivalent. MOB recovery with limited assistance. First Aid/CPR Training. Approved boating safety course.
2.	Emergency equipment provided by vessel operator: • GPS • Satellite phone (if cell phone service does not cover entire survey area) • VHF radios will remain on Channel 16 (for hailing/distress calls) at all times to listen for boat traffic, alerts, etc. unless actively keying/ communicating on another channel with another party • Rescue rope in throw bag (commercially available) or Life Sling • Horn (portable or fixed) and/or whistles • Waterproof flashlight • If vessel is not twin engine, a *secondary “kicker” motor or alternate means of propulsion (oars or paddles) • *Manual bilge pump • *Duct tape • *Mooring lines for securing boat on shore or alongside larger vessel • *Functional bilge pump/emergency pump • *Anchor with suitable sized anchor, 300 feet of anchor rode and 10 feet of chain • *Type 4 throwable ring or cushion • *Type BC fire extinguisher (10 pound) if extra fuel is carried in portable containers. * Required minimum equipment to be provided by vessel provider (chartered boat); project Field Coordinator to ensure remaining equipment is carried on board.	Inspect all equipment for battery life and integrity during the pre-trip boat inspection.	Personnel should be familiar with all emergency equipment.
3.	Immersion Suits for donning in cold water conditions	Inspect annually and service as required	Crew shall practice donning annually

4.	Revere Coastal Contact Life Raft	Inspect annually and service as required	Review of deployment procedure.
5.	Spill Kit which includes: Nitrile Gloves Absorbent pads Container to collect used spill equipment.	Click here to enter text.	Click here to enter text.
6.	Click here to enter text.	Click here to enter text.	Click here to enter text.
7.	Click here to enter text.	Click here to enter text.	Click here to enter text.
8.	Click here to enter text.	Click here to enter text.	Click here to enter text.
9.	Click here to enter text.	Click here to enter text.	Click here to enter text.

INSTRUCTIONS AND RISK MATRIX

Hazard Evaluation – Identify principal steps of the task. Identify potential safety/health hazards for each step and determine initial risk rating using the matrix provided below. Identify control measures including PPE for each hazard. Re-evaluate hazard potential and assign a final risk rating. If the final risk rating is a 5-9 (medium risk) or 10-25 (high risk), additional hazard controls shall be identified and applied until the final risk rating is reduced to 4 or below. The final risk rating cannot be reduced to 4 or lower, additional approvals are needed before the activity can begin. Add additional rows as required to cover all major steps/aspects of the activity.

Special Requirements – Identify equipment to be used including specific PPE required. Identify inspection requirements such as competent person, permit issue, documented task hazard analysis, etc. Identify training requirements such as hazard communication, scaffold user, fall protection, etc.

High ⟷ Low

Probability	Severity				
	5 - Catastrophic	4 - Critical	3 - Major	2 - Moderate	1 - Minor
5 - Frequent	25	20	15	10	5
4 - Probable	20	16	12	8	4
3 - Occasional	15	12	9	6	3
2 - Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

High ↕ Low

10-25 (red) are high risk, 5-9 (yellow) are medium risk, and 1-4 (green) are low risk

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & SH&E Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & SH&E Director